CHAPTER 3B. PAVEMENT AND CURB MARKINGS

Section 3B.01 Yellow Centerline Pavement Markings and Warrants

The following is added to this section:

Standard:

Centerline patterns shall be selected from those shown in Figures 3A-101 and 3A-104.

Raised retroreflective pavement markers shall be used to supplement the centerline markings on State highways, except in snow areas.

Support:

Refer to CVC 21460 for Double Lines.

Refer to CVC 21460.5 for Two-Way Left-Turn Lanes.

Standard:

A left edge line shall consist of a solid 100 mm (4 in) wide yellow line, yellow reflective pavement markers or a combination of line and markers as shown in Figure 3A-105.

Option:

Two normal solid yellow lines may be used as a left edge line on a divided roadway for more emphasis when motorists tend to use the shoulder for a through lane or where encroachments onto the shoulder occasionally occur.

Support:

Left edge line patterns for median islands are shown in Figure 3A-107.

Figure 3B-2. Examples of Four-or-More Lane, Two-Way Marking Applications

Standard:

Lane-use arrow markings shown in this figure as optional, shall not be optional but required. See Section 3B.19.

Section 3B.02 No-Passing Zone Pavement Markings and Warrants

Standard:

Paragraph 3 ("Where the distance…") is deleted and replaced with the following:

If the gap between successive no-passing zones is less than the sight distance for the prevailing speed shown in Table 3B-1, the no-passing zone shall be continuous.

The following is added to this section:

Support:

Refer to CVC 21750 through 21759 for overtaking and passing.

Refer to CVC 21460 for Double Lines.

CVC 21752 restricts passing (driving on left side of a two-way roadway) when approaching within 30 m (100 feet) of or when traversing any intersection or railroad grade crossing. CVC 21752 also restricts passing (driving on left side of a two-way roadway) when the view is obstructed upon approaching within 30 m (100 feet) of any bridge, viaduct, or tunnel. The patterns and policy for intersection markings are shown in Figure 3A-109.

Standard:

No-passing zone patterns shall be selected from those shown in Figures 3A-103 and 3A-104.

Guidance:

The no-passing zone markings at intersections, when used, should be between 30 m (100 ft) and 90 m (300 ft) in length at the approach to an intersection and placed in a pattern as shown in Figure 3A-109.

Section 3B.03 Other Yellow Longitudinal Pavement Markings

Option:

In Paragraph 5 ("Signs should be…"), the word "should" is changed to "may".

The following is added to this section:

Standard:

On State highways, reversible lanes shall be separated by physical barriers or delineators.

Support:

A two-way left-turn lane is a lane reserved in the center of a highway for exclusive use of left or U-turning vehicles. Refer to CVC 21460.5. It is normally used where there are many points of access.

Standard:

The two-way left-turn lane markings shall be selected from those shown in Figure 3A-108.

Option:

Optional treatments at signalized, major and minor intersections as shown in Figure 3B-7 (CA) may be used.

Two-way opposing pavement arrows may be used as shown in Figure 3B-7 (CA). The arrows may be supplemented by Two-Way Left Turn Lane (CA Code R67) sign at new installations and problem locations.

Guidance:

A gap in the markings should be made at all intersections.

Support:

For left turn channelization, see Figure 3B-101 and Department of Transportation's Highway Design Manual, Section 405.2. See Section 1A.11 for information regarding this publication.

Section 3B.04 <u>White Lane Line Pavement Markings and Warrants</u>

The following is added to this section:

Standard:

Lane line patterns shall be selected from those shown in Figure 3A-102. Detail 9 or 10 (65 km/h (40 mph) or less) or Detail 12 or 13 (70 km/h (45 mph) or more) shall be used on State freeways, expressways, freeway ramps, freeway to freeway connectors and collector roads, except when used in snow areas, the raised pavement markers will be recessed.

A right edge line shall consist of a solid 100 mm (4 in) wide white line.

Guidance:

The edge line should be placed 50 mm (2 in) in from the edge of traveled way, approximately 3.6 m (12 ft) from the lane line or centerline on highway mainlines, ramps, and connectors. See Figure 3A-106.

Generally, the solid edge line should be dropped at the beginning of intersection flares.

Option:

In heavy fog areas, or locations where additional guidance would be beneficial, a dotted 100 mm (4 in) wide white right edge line may be continued across an intersection.

Support:

Edge line is not used at turnouts. See Figure 3B-108.

Section 3B.05 <u>Other White Longitudinal Pavement Markings</u>

Standard:

In Paragraph 7 ("For Exit ramps…"), the second sentence ("With a parallel…") is deleted and replaced with the following:

With a parallel deceleration lane, a 200 mm (8 in) wide dotted white lane drop line shall be extended from the beginning of the channelizing line upstream of the entire length of the full-width deceleration lane.

In Paragraph 10 ("For entrance ramps with a parallel…") the phrase "one-half the length" is changed to "the entire length".

In Paragraph 12 ("Lane drop markings…") first sentence, the word "may" is changed to "shall".

Figure 3B-7 (CA). Example of Two-Way Left-Turn Lane Marking Applications

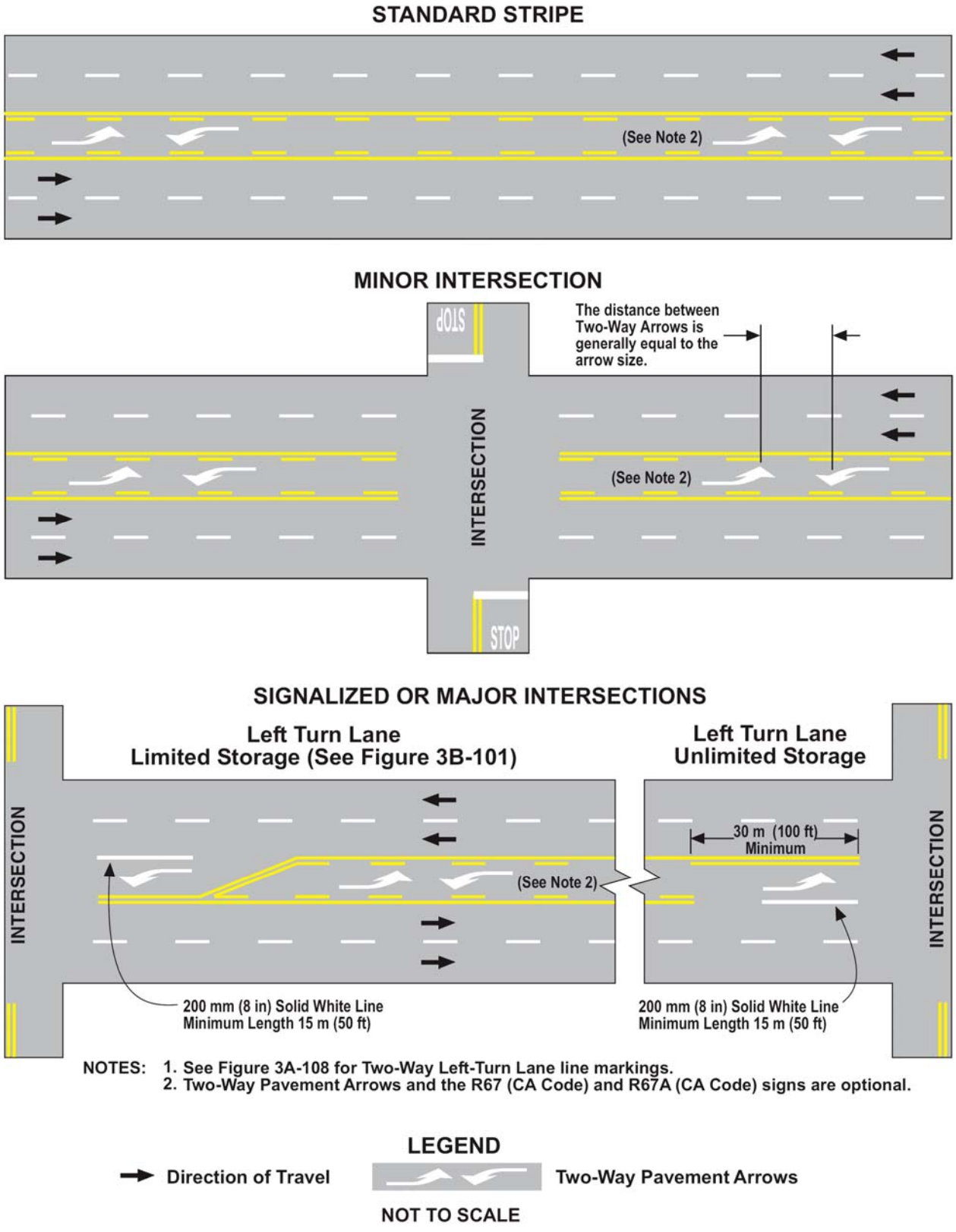
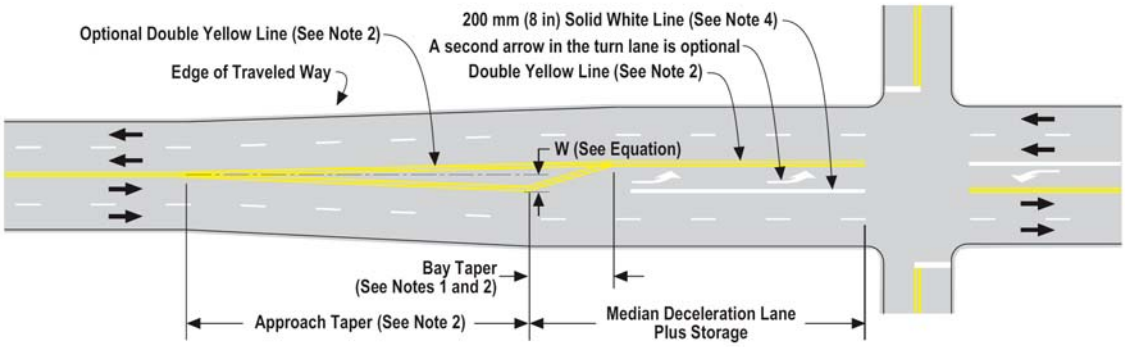


Figure 3B-101. Examples of Left-Turn Channelization Markings

4-Lane



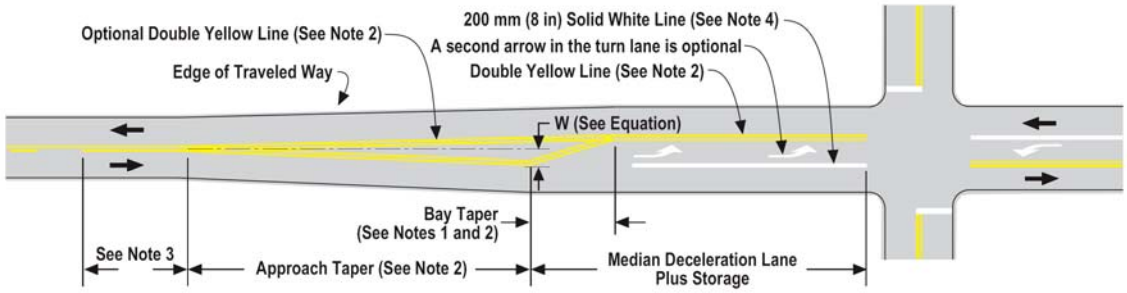
NOT TO SCALE

Approach Taper = $\frac{WS^2}{155}$ for speeds of 65 km/h ($\frac{WS^2}{60}$ for speeds of 40 mph) or less and
0.62*WS for speeds of 70 km/h (WS for speeds of 45 mph) or more.

Where S = Off Peak 85th Percentile Speed in km/h or mph.
In urban areas where space is restricted, "S" may be reduced
15 or 30 km/h (10 or 20 mph).

W = Width of Lateral Traffic Shift in meters (feet).

2-Lane



NOTES:

1. Bay taper length = 18 m (60 ft) or 27 (90 ft) m for Business, Residential and Urban Areas and 36 m (120 ft) for high speed Rural Areas.
2. See Striping Details 21 through 23 or 28 through 30.
3. On two lane roads, use Striping Details 15 through 20 for one half (1/2) of the passing sight distance for the prevailing speed.
4. See Striping Detail 38, use a minimum storage length of 15 m (50 ft).
5. See Highway Design Manual, Section 405.2 for design details.

The following is added to Paragraph 13 ("If used, lane…"):
Guidance:
If the dropped lane is an auxiliary lane 0.8 km (1/2 mi) or less in length, the lane drop line should extend throughout the entire length.
The following is added to this section:
Standard:
The lane drop line pattern shall be as shown in Figure 3A-111.
Support:
See Figures 3A-111, 3B-8 (CA), 3B-9 (CA), 3B-10 (CA), 3B-12 (CA) and 3B-107 for further details of markings and signing.
Option:
A 200 mm (8 in) wide single solid white line preceded by a 200 mm (8 in) wide dotted white line may be placed in advance of an intersection where the outside lane is dropped at the intersection, and as a result, creates a mandatory turn lane.
Standard:
If used, diagonal lines shall be the same color as the edge line.

Figure 3B-8. Examples of Channelizing Line Applications for Exit Ramp Markings
Standard:
MUTCD Figure 3B-8 is deleted and replaced with Figure 3B-8 (CA).

Figure 3B-9. Examples of Channelizing Line Applications for Entrance Ramp Markings
Standard:
MUTCD Figure 3B-9 is deleted and replaced with Figure 3B-9 (CA).

Figure 3B-10. Example of Lane Drop Markings at Exit Ramps
Standard:
MUTCD Figure 3B-10 is deleted and replaced with Figure 3B-10 (CA).

Section 3B.06 Edge Line Pavement Markings
The following is added to this section:
Standard:
Exit and entrance ramps, including freeway connectors, shall be marked with a yellow edge line supplemented with yellow reflective pavement markers on the left and a white edge line on the right. See Figure 3A-105.

Section 3B.07 Warrants for Use of Edge Lines
The following is added to this section:
Standard:
Edge lines shall be used on all State highways, except urban type streets with curbs and parking provisions.
Option:
The Two-Way Traffic (W6-3) sign may be used in conjunction with edge lines at locations where motorists could perceive that they are on a one-way roadway when, in fact, they are on a two lane, two-way highway. See Section 2C.34 for W6-3 sign.

Figure 3B-8 (CA). Example of Signing and Channelizing Line Applications for Exit Ramp Markings (Sheet 1 of 3)

a - Parallel deceleration lane

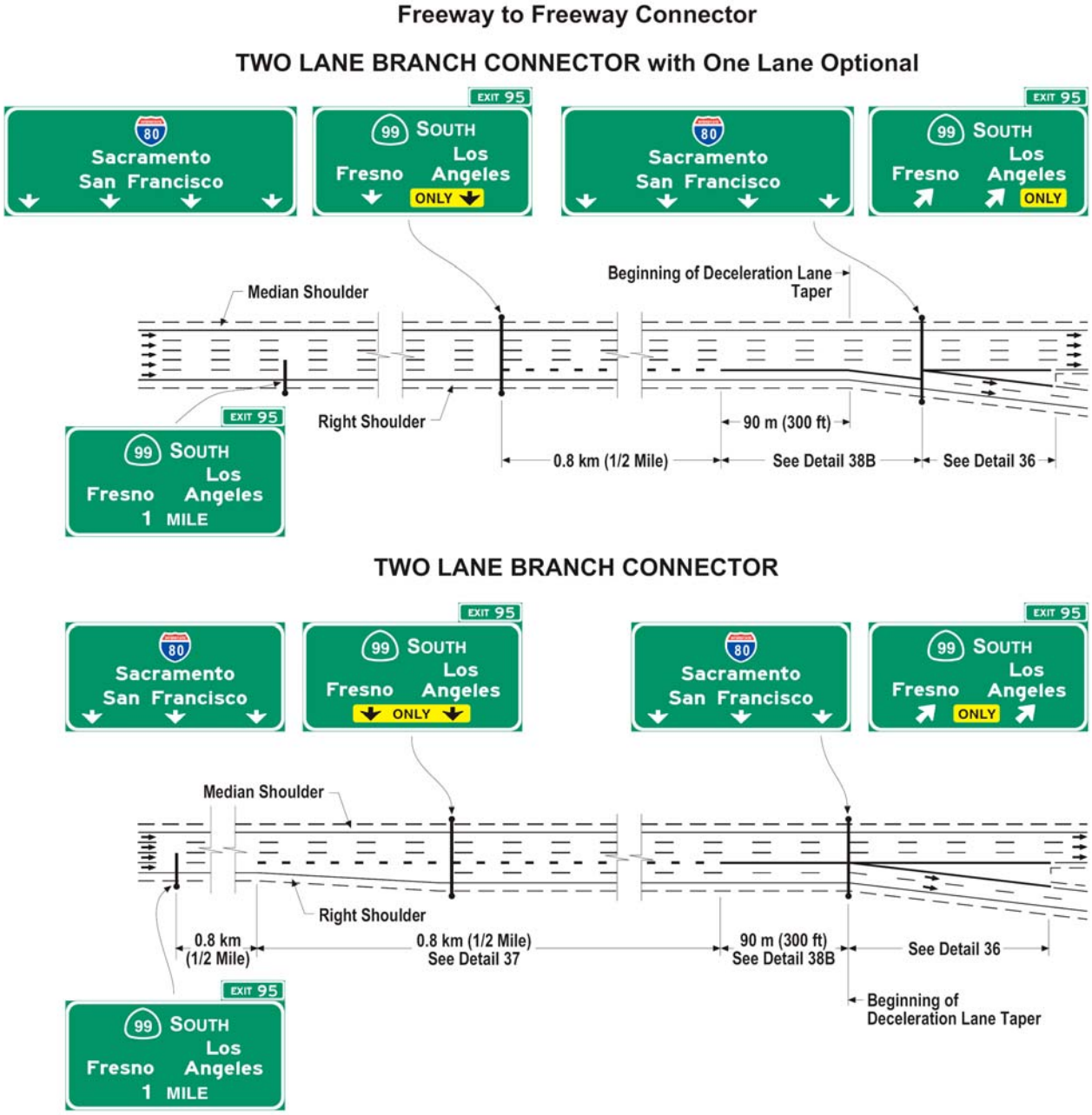
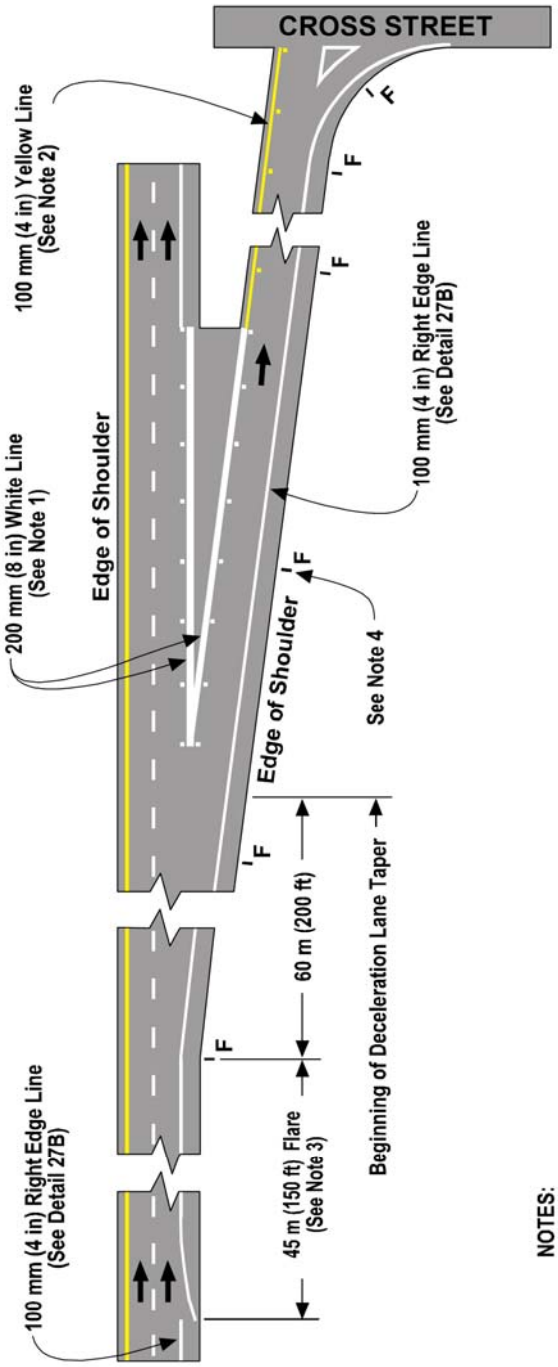


Figure 3B-8 (CA). Example of Signing and Channelizing Line Applications for Exit Ramp Markings (Sheet 2 of 3)

b - Tapered deceleration lane



NOTES:

1. Place a 200 mm (8 in) Solid White Line and One-Way Clear Retroreflective Markers on 7.32 m (24 ft) centers. See Detail 36.
2. Place a 100 mm (4 in) Solid Yellow Left Edge Line and One-Way Yellow Retroreflective Pavement Markers on 7.32 m (24 ft) centers. See Detail 25A.
3. A flared Right Edge Line 60 m (200 ft) in advance of an exit ramp, is recommended where climatic conditions, such as areas that experience heavy fog, may require additional guidance. In areas that normally do not experience these conditions, a continuous edge line may be used. See also Section 3B.11, Advance Markers - Exit Ramps.
4. Place delineators 0.6 m (2 ft) to 1.8 m (6 ft) outside edge of paved shoulder, approximately 60 m (200 ft) apart with a minimum of 3 delineators per tangent. For additional details on delineator locations and spacing on curves, see Figure 3D-1 and 3D-102.
5. See Figure 3B-22 (CA) for Ramp Terminal Markings and Section 2E.50.

LEGEND

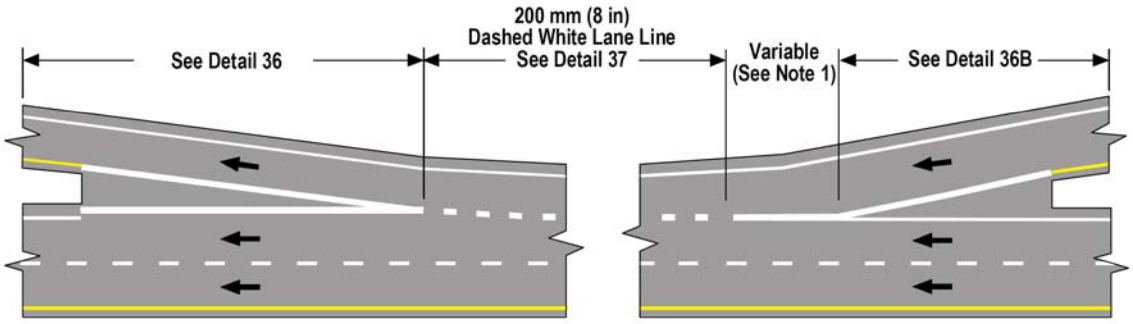
I Delineator → Direction of Travel

NOT TO SCALE

Figure 3B-8 (CA). Example of Signing and Channelizing Line Applications for Exit Ramp Markings (Sheet 3 of 3)

c - Cloverleaf Ramps

ACCELERATION/DECELERATION (Weaving) LANE



Acceleration/Deceleration Lanes less than 180 m (600 ft) are normally not striped. Lanes more than 180 m (600 ft) and less than 0.8 km (1/2 Mile) should use a 200 mm (8 in) Dashed White Stripe (Detail 37). Lanes longer than 0.8 km (1/2 Mile), a 100 mm (4 in) Dashed White Line (Detail 8 or 11) should be used.

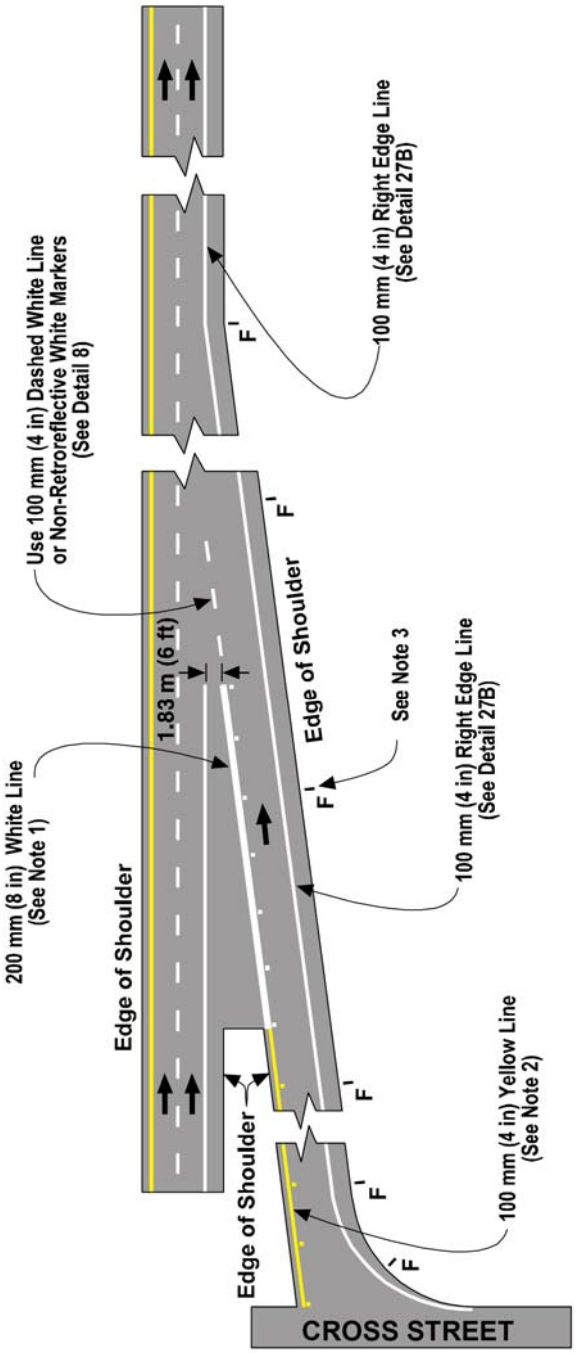
NOTES:

1. **A 200 mm (8 in) Solid White Channelizing Line should be continued for approximately one-tenth the length of the acceleration lane beyond the tangent point. See Detail 38A.**
2. **A 100 mm (4 in) Dashed White Lane Line (Detail 8 or 11) is normally used for the remaining length of the lane. However, in those locations where the lane may give the appearance of an added lane and to discourage its use by through traffic, a 200 mm (8 in) Dashed White Channelizing Line (Detail 37) may be considered.**
3. **See Figure 3B-12 (CA) for transition area signing and marking details, when the acceleration lane is longer than 1.6 km (1 mi).**

LEGEND

← Direction of Travel NOT TO SCALE

Figure 3B-9 (CA). Examples of Channelizing Line Application for Entrance Ramp Marking (Sheet 1 of 2)



NOTES:

1. Place a 200 mm (8 in) Solid White Line and One-Way Clear Retroreflective Markers on 7.32 m (24 ft) centers. See Detail 36A.
2. Place a 100 mm (4 in) Solid Yellow Left Edge Line and One-Way Yellow Retroreflective Pavement Markers on 7.32 m (24 ft) centers. See Detail 25A.
3. Place delineators 0.6 m (2 ft) to 1.8 m (6 ft) outside the edge of paved shoulder, approximately 60 m (200 ft) apart with a minimum of 3 delineators per tangent. For additional details on delineator locations and spacing on curves, see Figure 3D-1 and 3D-102.
4. When the entrance ramp lane becomes an added freeway lane, it shall be marked as a standard lane line. If the additional lane terminates at an exit ramp within 0.8 km (1/2 Mile).

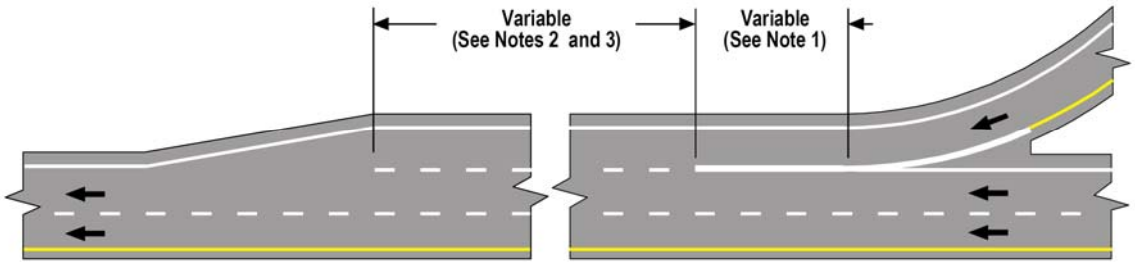
LEGEND

I Delineator → Direction of Travel

NOT TO SCALE

Figure 3B-9 (CA). Examples of Channelizing Line Application for Entrance Ramp Marking (Sheet 2 of 2)

PARALLEL ACCELERATION LANE



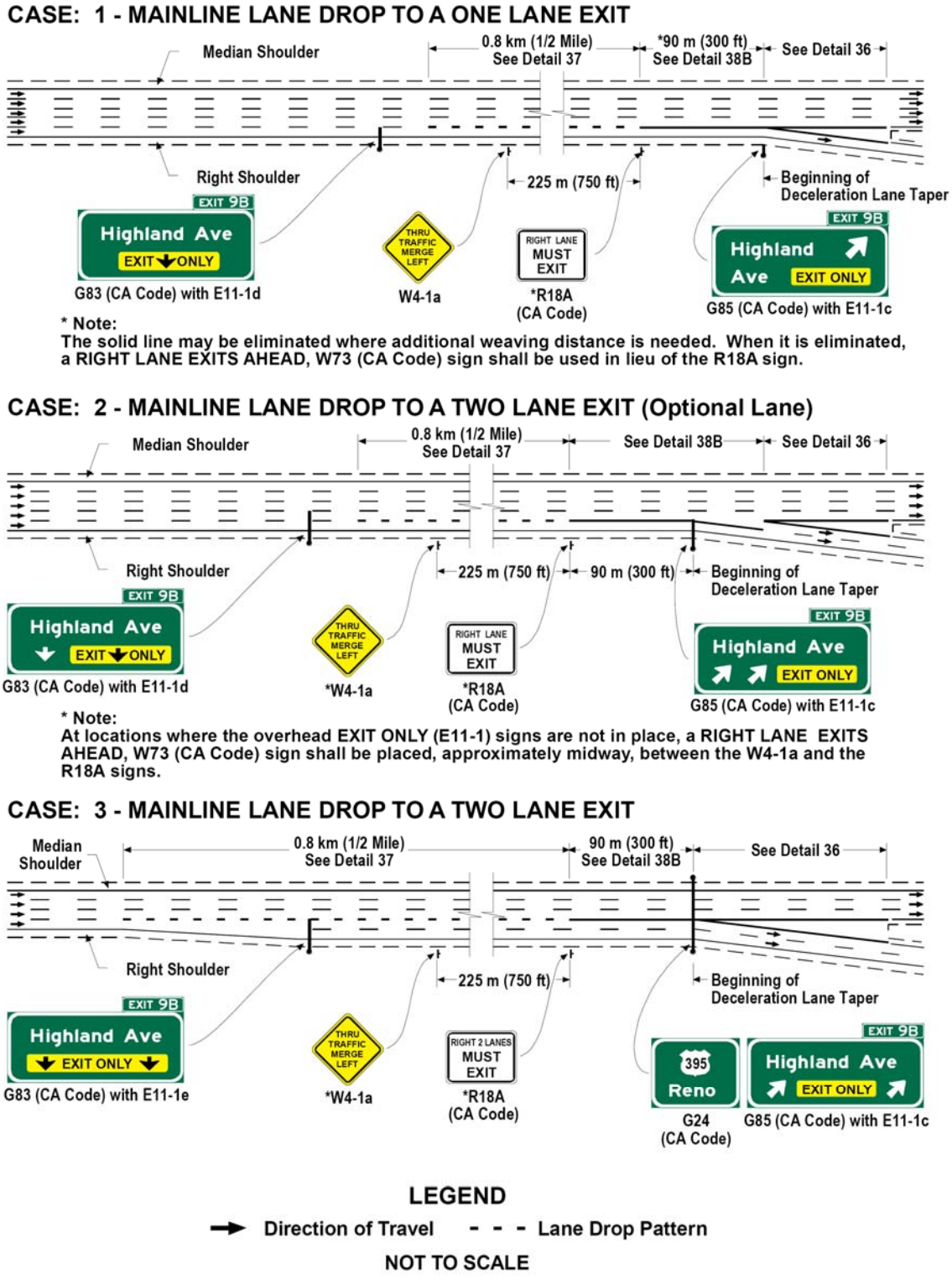
NOTES:

1. **A 200 mm (8 in) Solid White Channelizing Line should be continued for approximately one-tenth the length of the acceleration lane beyond the tangent point. See Detail 38A.**
2. **A 100 mm (4 in) Dashed White Lane Line (Detail 8 or 11) is normally used for the remaining length of the lane. However, in those locations where the lane may give the appearance of an added lane and to discourage its use by through traffic, a 200 mm (8 in) Dashed White Channelizing Line (Detail 37) may be considered.**
3. **See Figure 3B-12 (CA) for transition area signing and marking details, when the acceleration lane is longer than 1.6 km (1 mi).**

LEGEND

← **Direction of Travel** **NOT TO SCALE**

Figure 3B-10 (CA). Example of Lane Drop Signing and Markings at Exit Ramps



Section 3B.08 Extensions Through Intersections or Interchanges
Standard:

In Paragraph 1 ("Pavement markings extended …"), the phrase "…and at least the same width …" is deleted as it conflicts with Paragraph 2 ("A normal line…").

The following is added to this section:

Support:

See Figure 3A-112, Detail 40 and 40A for lane line extensions.

Figure 3B-11. Examples of Extensions through Intersections
Standard:

MUTCD Figure 3B-11 (c) is deleted as it could mislead motorists to believe that the through lane traffic may also turn left.

Lane-use arrow markings shown in this figure as optional, shall not be optional but required. See Section 3B.19.

Section 3B.09 Lane Reduction Transition Markings

The following is added to this section:

Support:

Typical lane reduction transitions (four lane to two lane) and transitions from two lanes to four lanes are shown in Figure 3B-12 (CA).

Figure 3B-12. Examples of Lane Reduction Markings
Standard:

MUTCD Figure 3B-12 is deleted and replaced with Figure 3B-12 (CA).

Section 3B.11 Raised Pavement Markers
Standard:

The N criteria for spacing as mentioned in this section shall not be used in California.

The widths and patterns of raised pavement markers shall conform to the details shown in Figures 3A-101 through 3A-112. See Section 3A.05.

The following is added to this section:

Support:

Raised pavement markers are not normally placed where snow plows would damage the markers and require an unusual amount of replacement.

Guidance:

When used in these areas, they should be recessed, as shown in Department of Transportation's Standard Plan A20-D. See Section 1A.11 for information regarding this publication.

Advance Markers

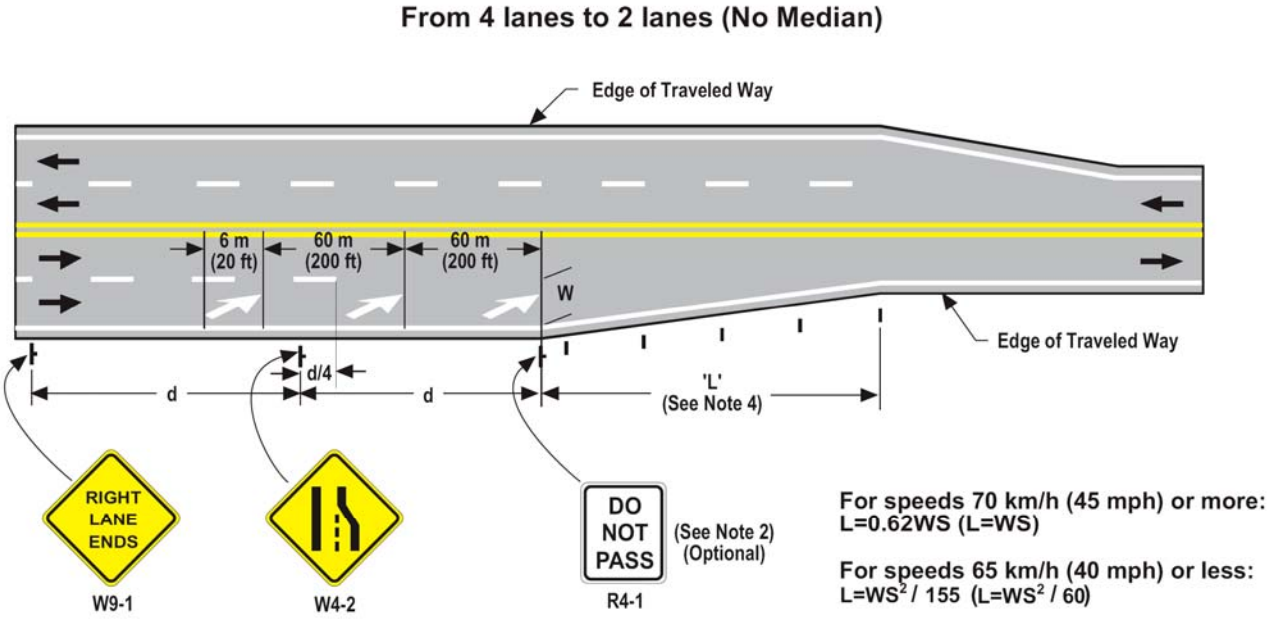
Option:

Advance Markers at exit ramps may be used to help motorists locate exit ramps in heavy fog areas.

Support:

The Advance Markers consist of a 3-2-1 countdown pattern of one-way clear reflective pavement markers. The pattern consists of three markers placed on the right shoulder 640 m (2100 ft) in advance of the neutral area (gore), two markers at 425 m (1400 ft) and one marker at 215 m (700 ft). The markers are placed on a line perpendicular to the lane line at 0.3 m (1 ft) spacing beginning 50 mm (2 in) off the edge of traveled way.

Figure 3B-12 (CA). Examples of Signs and Lane Reduction Markings (Sheet 1 of 3)



NOTES:

1. A W9-1 sign should be used in conjunction with the W4-2 sign.
2. The R4-1 sign should not be used on a freeway or expressway, etc., where two or more lanes remain after a lane is dropped. See Section 2B.24.
3. Lane Reduction Arrows are placed in groups of three. They are optional on highways where speeds are 65 km/h (40 mph) or less. Where speeds are 70 km/h (45 mph) or more or a W9-1 sign is used, an additional group of arrows may be placed in advance of the W9-1 sign. See also Note 4.
4. Delineators should be spaced approximately 60 m (200 ft) apart. There should be a minimum of 3 delineators throughout the entire length of a lane reduction transition. See Section 3D.04.
5. A left lane drop should be avoided on undivided roadways because of the difficulty in placing signs to warn motorists in the left lane.

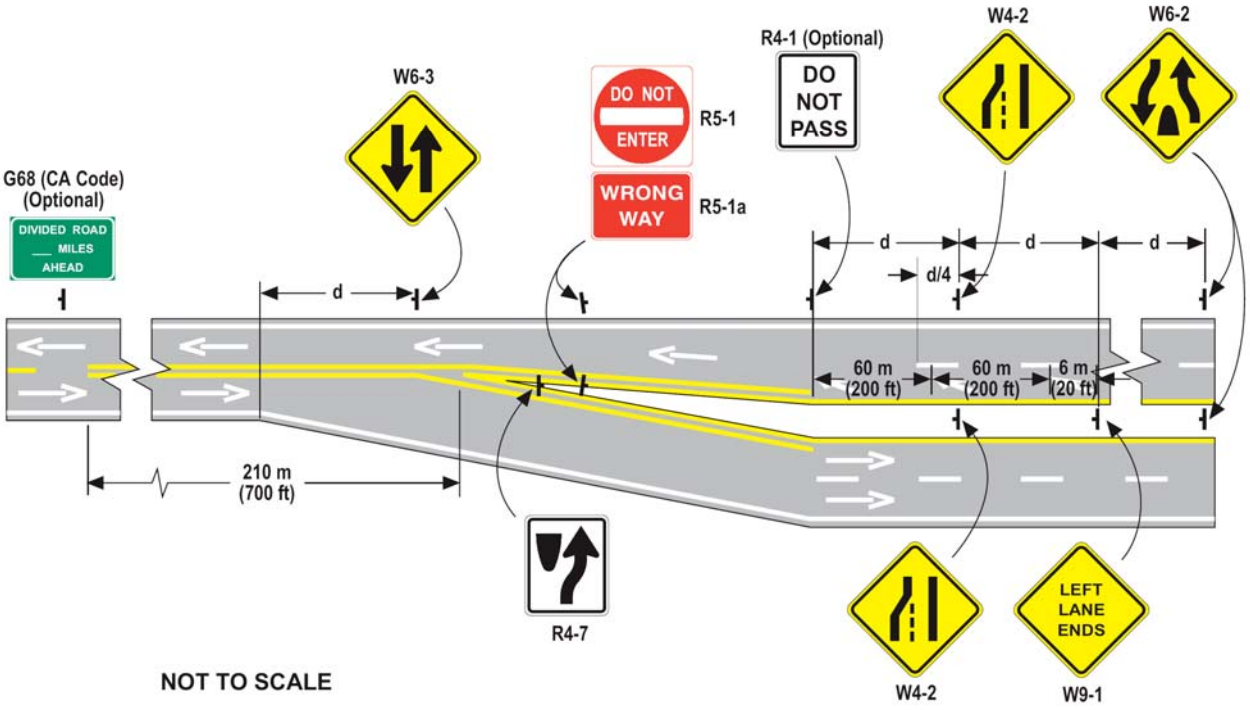
LEGEND

L = Length in meters (feet)
S = Posted, 85th Percentile, statutory speed, or design speed for new construction in km/h (mph)
W = Offset in meters (feet)
d = Advance Placement Distance (see Section 2C.05)

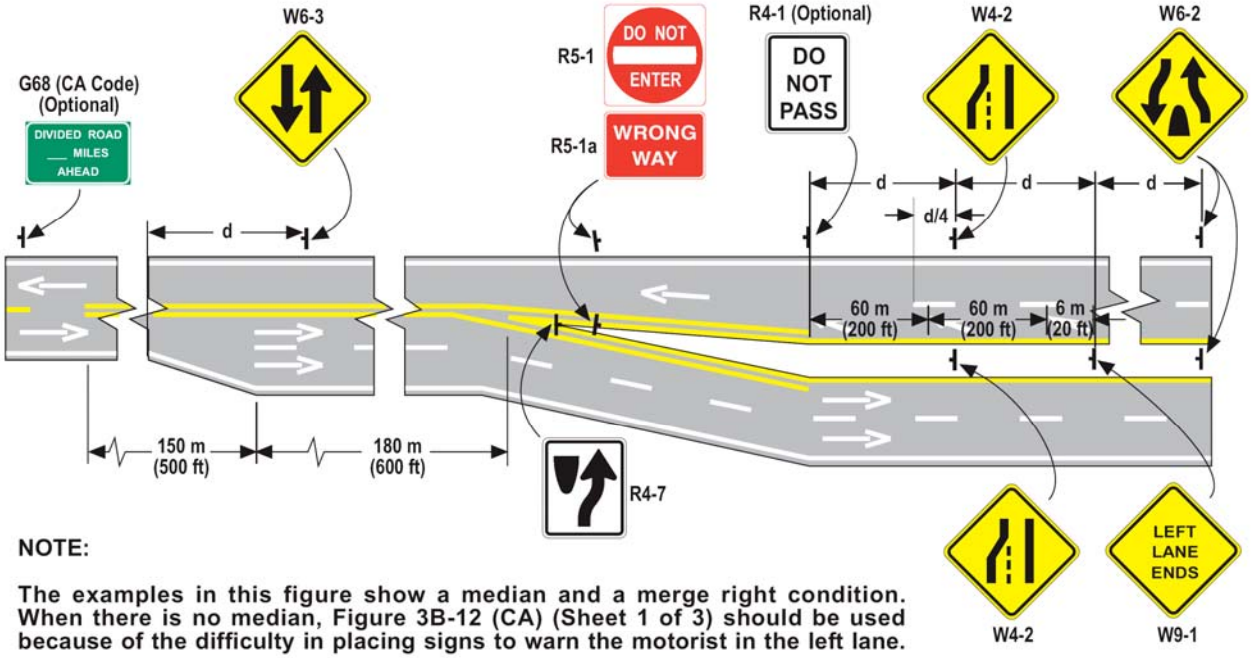
Direction of Travel
Lane Reduction Arrow
Delineators (Type F)
NOT TO SCALE

Figure 3B-12 (CA). Examples of Signs and Lane Reduction Markings (Sheet 2 of 3)

From 4 lanes to 2 lanes (With Median)



NOT TO SCALE



NOTE:

The examples in this figure show a median and a merge right condition. When there is no median, Figure 3B-12 (CA) (Sheet 1 of 3) should be used because of the difficulty in placing signs to warn the motorist in the left lane.

LEGEND

d = Advance Placement Distance (see Section 2C.05)

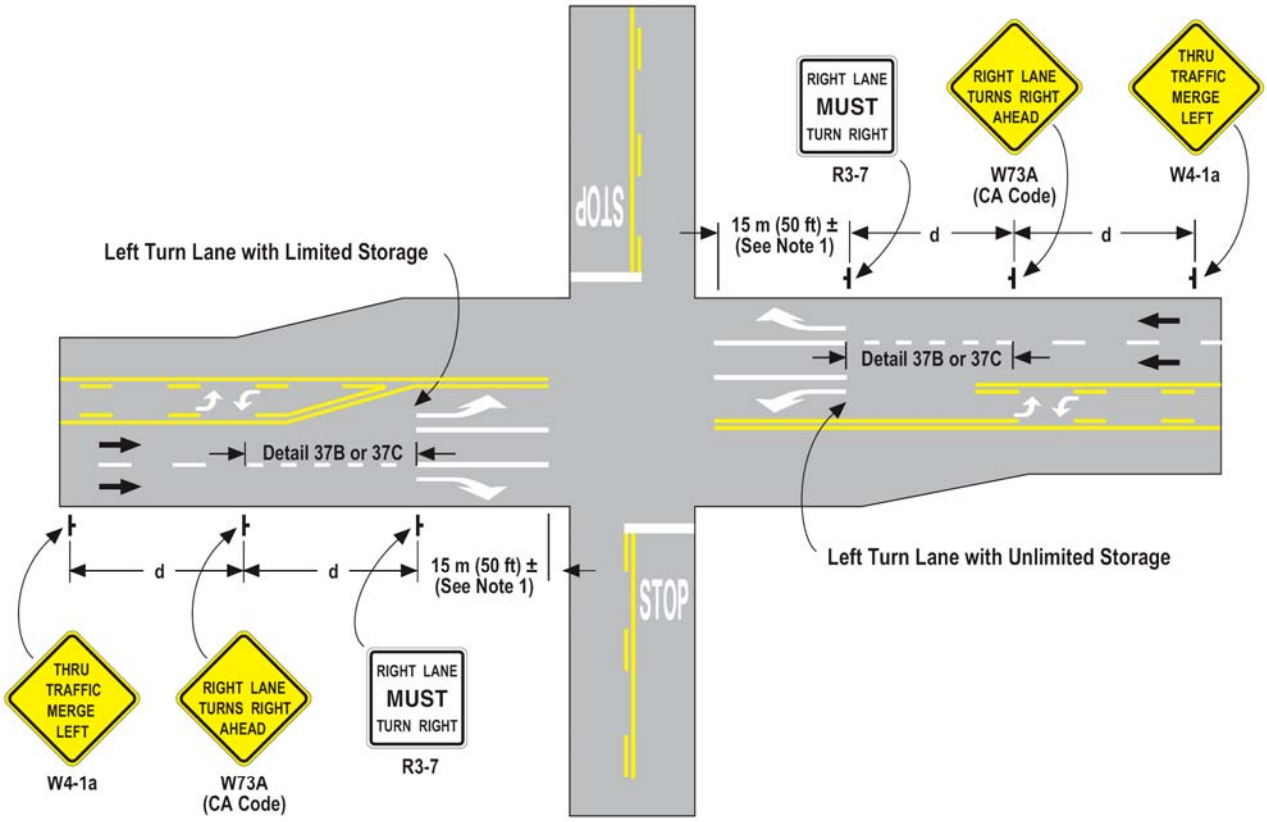
Delineators (Type F)

Lane Reduction Arrow

Wrong Way Arrow

Figure 3B-12 (CA). Examples of Signs and Lane Reduction Markings (Sheet 3 of 3)

Conventional Highway Intersections



NOTES:

1. See Figure 3B-101 for taper and storage lengths. See Detail 37B and 37C for lane drop markings. The minimum length of solid channelizing line is 15 m (50 ft). However, if using Detail 37C, the minimum length will be 14.64 m (48 ft).

2. The RIGHT LANE TURNS RIGHT AHEAD, (CA Code W73A) sign should be placed in conjunction with the RIGHT LANE MUST TURN RIGHT (R3-7) sign and the appropriate lane line and markings. A THRU TRAFFIC MERGE LEFT (W4-1a) sign may be placed in advance of the W73A (CA Code) sign. However, adequate sight distance or proximity to a freeway ramp, cross road, etc., may dictate the need and location of additional signs and the length of the turn lane.

LEGEND

Direction of Travel — Pavement Arrows

Sign Location — d = Advance Placement Distance (see Section 2C.05)

NOT TO SCALE

Location Markers for Fire Hydrants

Option:

Blue raised reflective pavement markers, may be placed on a highway, street, or road, to mark fire hydrant and/or water supply locations.

Standard:

The blue raised reflective pavement markers shall not be used for any other purpose.

Local agencies shall not place blue reflective pavement markers on a State highway unless they first obtain an encroachment permit from the Department of Transportation. The agency responsible for the placement shall also be responsible for the maintenance and replacement. See Section 13060, of the Health and Safety Code. See Section 1A.11 for information regarding this publication.

Guidance:

In general, the blue reflective pavement markers should be placed 150 mm (6 in) from the centerline stripe, or approximate center of the pavement where there is no centerline stripe, on the side nearest the fire hydrant.

When placed on expressways, freeways and freeway ramps, they should be placed on the shoulder, 0.31 m (1 ft) to the right of the edge line, opposite the fire hydrant. Typical marker locations are shown on Figure 3B-102.

Option:

Because fire hydrants adjacent to freeways may be out of the right-of-way and, in many locations, out of view from the freeway, some fire districts may want to install small supplemental signs (CA Code S9 and S10) or markings to identify the hydrant number or distance to the hydrant. These installations are optional and at the discretion of the Department of Transportation's Districts.

Section 3B.12 Raised Pavement Markers as Vehicle Positioning Guides with Other Longitudinal Markings

Standard:

The N criteria for spacing as mentioned in this section shall not be used in California.

The widths and patterns of raised pavement markers shall conform to the details shown in Figures 3A-101 through 3A-112. See Section 3A.05.

Section 3B.13 Raised Pavement Markers Supplementing Other Markings

Standard:

The N criteria for spacing as mentioned in this section shall not be used in California.

The widths and patterns of raised pavement markers shall conform to the details shown in Figures 3A-101 through 3A-112. See Section 3A.05.

Section 3B.14 Raised Pavement Markers Substituting for Pavement Markings

Standard:

The N criteria for spacing as mentioned in this section shall not be used in California.

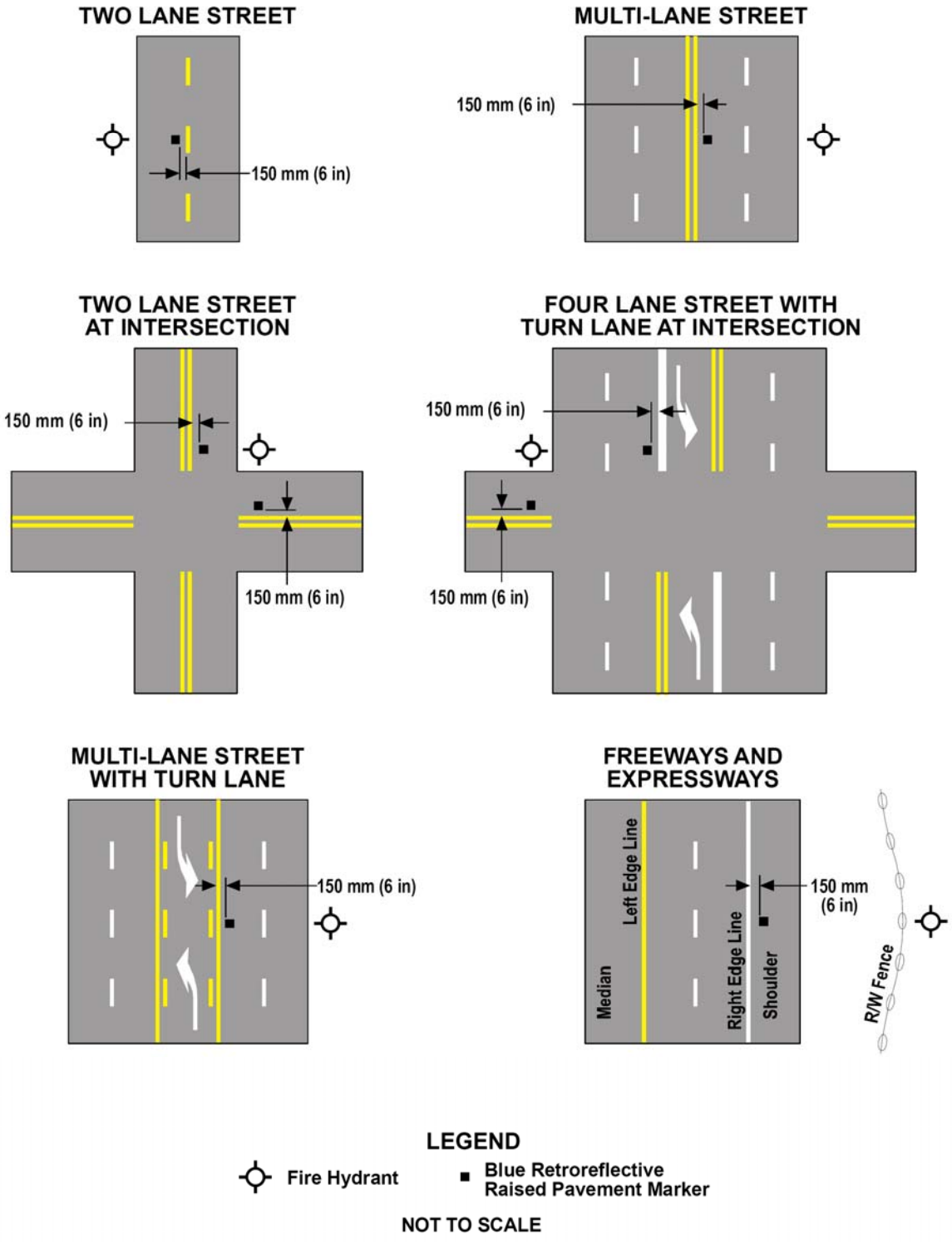
The widths and patterns of raised pavement markers shall conform to the details shown in Figures 3A-101 through 3A-112. See Section 3A.05.

The following is added to this section:

Standard:

If used on State highways, internally-illuminated raised pavement markers shall be installed by an encroachment permit and include a maintenance agreement as a provision of the permit for the service life of the markers.

Figure 3B-102. Examples of Fire Hydrant Location Pavement Markers



Section 3B.15 Transverse Markings

The following is added to this section:

Standard:

Crosswalk markings near schools shall be yellow. Refer to CVC 21368 and Part 7.

Support:

Refer to Department of Transportation's Standard Plans for pavement marking letters, numerals and symbols. See Section 1A.11 for information regarding this publication

Section 3B.16 Stop and Yield Lines

The following is added to this section:

Support:

As defined in CVC 377, a "limit line" is a solid white line not less than 300 mm (12 in) nor more than 600 mm (24 in) wide, extending across a roadway or any portion thereof to indicate the point at which traffic is required to stop in compliance with legal requirements.

Standard:

For all purposes, limit line(s) shall mean stop line(s) as referenced in the MUTCD.

A limit line shall be placed in conjunction with STOP (R1-1) signs on paved approaches not controlled by signals.

Guidance:

If a sidewalk exists, the limit line should be placed in advance of an unmarked crosswalk area.

Option:

A limit line may be placed in advance of a crosswalk where vehicles are required to stop, in compliance with a STOP (R1-1) sign, traffic control signal or some other traffic control device.

Support:

If a marked crosswalk is in place, it would normally function as a limit line.

Typical limit line markings are shown in Figure 3B-103.

Standard:

The individual triangles comprising the yield line shall have a base of 0.6 m (2 ft) wide and a height of 0.9 m (3 ft). The space between the triangles shall be 0.3 m (1 ft).

Support:

Figure 3B-14 (CA) shows typical yield line layout for streets and highways.

Figure 3B-14. Examples of Yield Line Layouts

Standard:

MUTCD Figure 3B-14 is deleted and replaced with Figure 3B-14 (CA).

Section 3B.17 Crosswalk Markings

Standard:

In Paragraph 4 ("When crosswalk lines…"), the phrase "150 mm (6 in)" is changed to "300 mm (12 in)".

The following is added to this section:

Standard:

Crosswalk markings near schools shall be yellow as provided in CVC 21368. See Part 7.

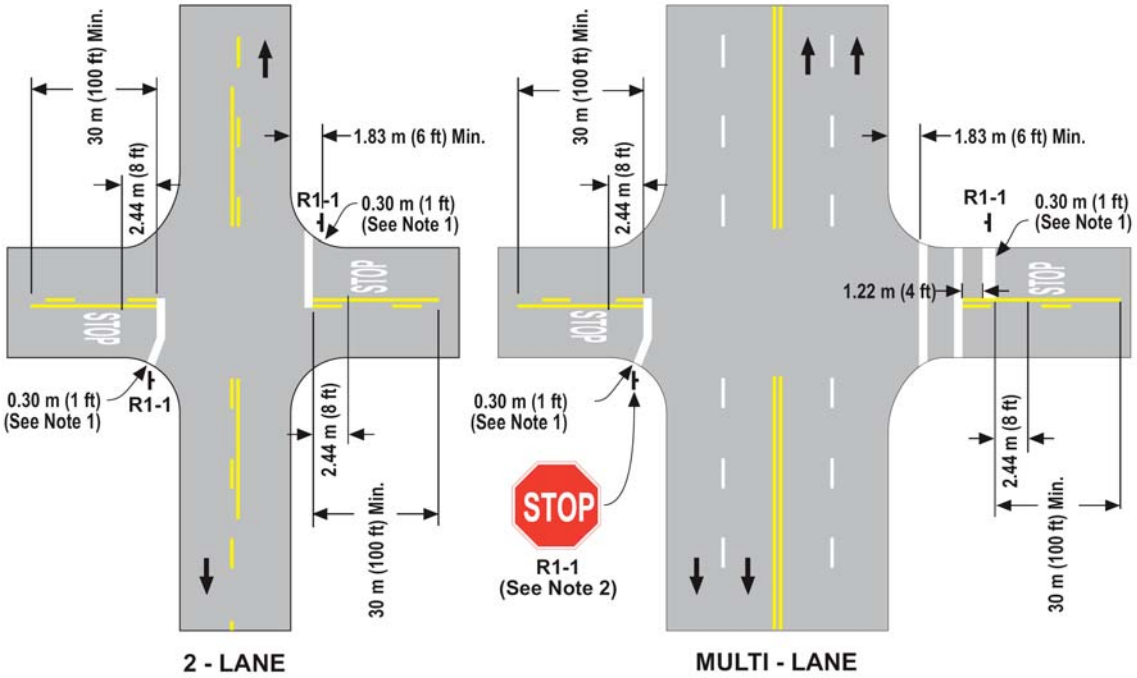
Option:

Pedestrian crosswalk markings may be placed at intersections, representing extensions of the sidewalk lines, or on any portion of the roadway distinctly indicated for pedestrian crossing. Refer to CVC 275.

Guidance:

In general, crosswalks should not be marked at intersections unless they are intended to channelize pedestrians. Emphasis is placed on the use of marked crosswalks as a channelization device.

Figure 3B-103. Examples of Intersection Markings



NOTES:

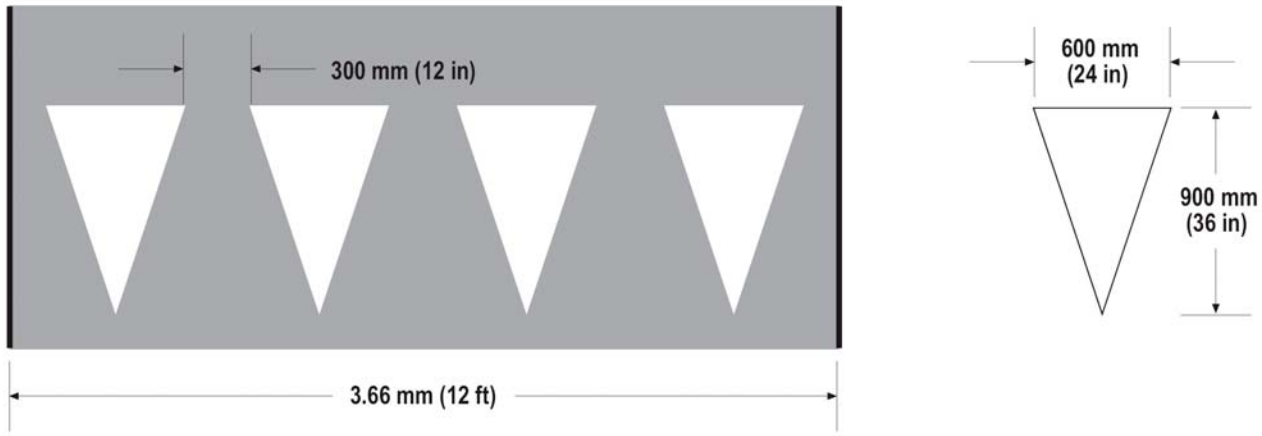
1. The Limit Line on wide side roads on long radius corners may be bent at a 45°± angle for traffic making a right turn.
2. When a STOP AHEAD (W3-1a) sign is used, a pavement legend may be placed to supplement the sign according to Section 3B.19.

LEGEND

→ Direction of Travel

NOT TO SCALE

Figure 3B-14 (CA). Example of Yield Line Layout



The following factors may be considered in determining whether a marked crosswalk should be used:

- Vehicular approach speeds from both directions.
- Vehicular volume and density.
- Vehicular turning movements.
- Pedestrian volumes.
- Roadway width.
- Day and night visibility by both pedestrians and motorists.
- Channelization is desirable to clarify pedestrian routes for sighted or sight impaired pedestrians.
- Discouragement of pedestrian use of undesirable routes.
- Consistency with markings at adjacent intersections or within the same intersection.

Option:

Crosswalk markings may be established between intersections (mid-block) in accordance with CVC 21106(a).

Guidance:

Mid-block pedestrian crossings are generally unexpected by the motorist and should be discouraged unless, in the opinion of the engineer, there is strong justification in favor of such installation. Particular attention should be given to roadways with two or more traffic lanes in one direction as a pedestrian may be hidden from view by a vehicle yielding the right-of-way to a pedestrian.

Option:

When diagonal or longitudinal lines are used to mark a crosswalk, the transverse crosswalk lines may be omitted.

Standard:

However, when the factor that determined the need to mark a crosswalk is the clarification of pedestrian routes for sight-impaired pedestrians, the transverse crosswalk lines shall be marked.

Option:

At controlled approaches, limit lines (stop lines) help to define pedestrian paths and are therefore a factor the engineer may consider in deciding whether or not to mark the crosswalk.

Where it is desirable to remove a marked crosswalk, the removal may be accomplished by repaving or surface treatment.

Guidance:

A marked crosswalk should not be eliminated by allowing it to fade out or be worn away.

Support:

The worn or faded crosswalk retains its prominent appearance to the pedestrian at the curb, but is less visible to the approaching driver.

Standard:

Notification to the public shall be given at least 30 days prior to the scheduled removal of an existing marked crosswalk. The notice of proposed removal shall inform the public how to provide input related to the scheduled removal and shall be posted at the crosswalk identified for removal. Refer to CVC 21950.5

Option:

Signs may be installed at or adjacent to an intersection directing that pedestrians shall not cross in a crosswalk indicated at the intersection in accordance with CVC 21106(b).

White PED XING pavement markings may be placed in each approach lane to a marked crosswalk, except at intersections controlled by traffic signals or STOP or YIELD signs.

Section 3B.18 <u>Parking Space Markings</u>

The following is added to this section:

Support:

Refer to CVC 22500 through 22522 for parking space markings.

Refer to Section 2B.39 for Parking Regulations.

<u>Policy on Parking Restrictions</u>

Option:

Local authorities may, by ordinance, provide for the establishment of parking meter zones and cause streets and highways to be marked with white lines designating parking spaces. Refer to CVC Section 22508.

Standard:

Where the proposed zones are on State highways, the ordinances shall be approved by the Department of Transportation.

Local authorities shall furnish a sketch or map showing the definite location of all parking meter stalls on State highways before departmental approval is given.

Support:

The District Directors have been delegated the authority to approve such ordinances.

The desirable dimensions of parking meter stalls are 2.4 m (8 ft) by 7.3 m (24 ft) with a minimum length of 6.1 m (20 ft).

Standard:

At all intersections, one stall length on each side measured from the crosswalk or end of curb return shall have parking prohibited. A clearance of 1.8 m (6 ft) measured from the curb return shall be provided at alleys and driveways.

Guidance:

At signalized intersections parking should be prohibited for a minimum of two stall lengths on the near side and one stall length on the far side. See Figure 3B-18 (CA).

Standard:

The departmental approval for the installation of the parking meters shall be covered by an encroachment permit.

Option:

Local authorities may by ordinance permit angle parking. Refer to CVC 22503.

Support:

Department of Transportation does not approve ordinances establishing angle parking on State highways.

Diagonal parking stalls are not permitted on State highways.

Figure 3B-18. Examples of Parking Space Markings
Standard:

MUTCD Figure 3B-18 is deleted and replaced with Figure 3B-18 (CA).

Section 3B.19 Pavement Word and Symbol Markings
Standard:

Paragraphs 9 ("The SCHOOL word …") and 10 ("When the SCHOOL …") are deleted. If used, the SCHOOL pavement marking shown in Figure 3B-20 (CA) shall be used and it shall be restricted to a single lane.

Guidance:

In Paragraph 3 ("Letters and numerals…"), the phrase "1.8 m (6 ft)" is changed to "2.44 m (8 ft)".

Option:

In Paragraph 11 ("Pavement word and…"), the words "should" and "scaled" are changed to "may" and "spaced", respectively.

The following is added to this section:

Standard:

Word and symbol markings near schools shall be yellow as provided in CVC 21368. See Part 7.

Support:

Normally, pavement word and symbol markings supplement standard signing.

Guidance:

A STOP pavement marking should be placed on all but minor approaches to State highways not controlled by signals.

Option:

Pavement markings with appropriate figures may be used to supplement speed limit signs. See Section 2B.13.

Arrows:
Standard:

Where a turning movement is mandatory, an arrow marking accompanied by a regulatory sign shall be used. However, when an additional clearly marked lane is provided for the approach to the turning movement, the sign is not required. Refer to CVC 22101.

Support:

Examples of entrance/exit ramp terminal signs and pavement markings are shown in Figure 3B-23 (CA).

Guidance:

The Type V arrows and warning signs, as shown in Figure 3B-104, should be used at locations where motorists could perceive that they are on a one-way roadway when, in fact, they are on a two lane, two-way highway. Following are some typical situations:

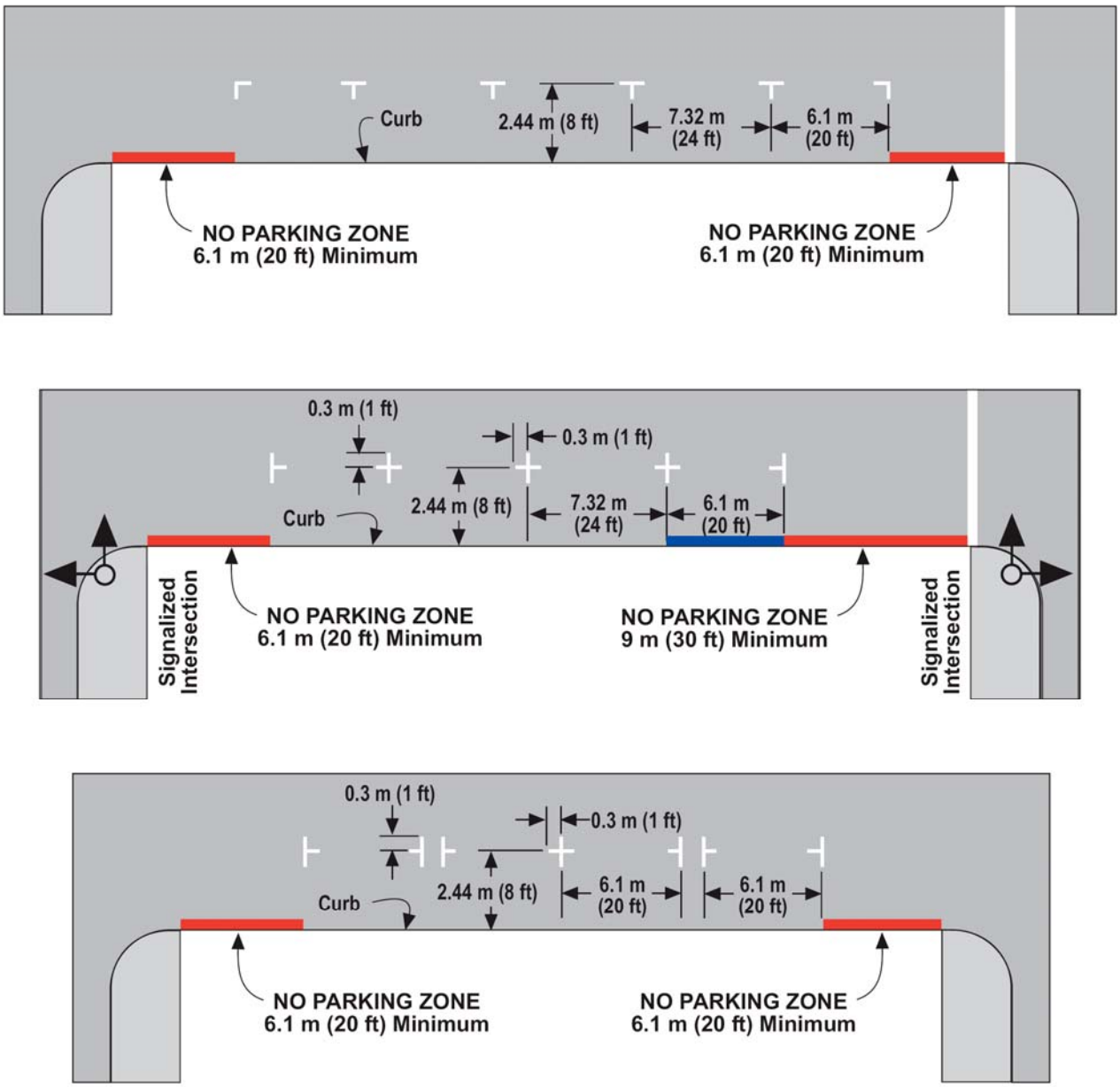
- Construction sites where a two-lane highway is being converted to a freeway or an expressway.
- Two-lane, two-way highways where ultimate freeway or expressway right-of-way has been purchased and grading for the full width has been completed.
- Two-lane, two-way highways following long sections of multi-lane freeway or expressway.

Exit Ramp Arrows:
Standard:

A minimum of two pavement arrows shall be placed on each freeway exit ramp lane.

A Type V arrow shall be the first arrow, on the ramp, in the direction of travel when exiting the freeway.

Figure 3B-18 (CA). Examples of Parking Space Markings

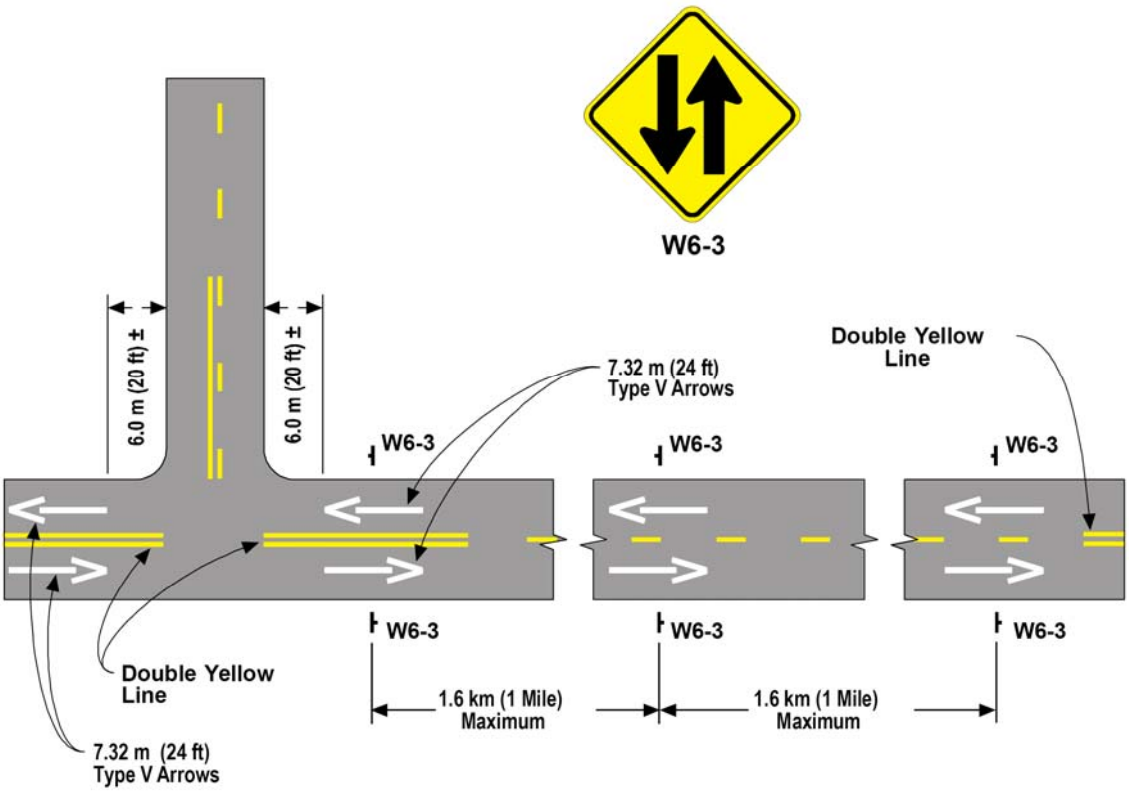


NOT TO SCALE

NOTES:

1. For Parking Stalls along the left side curb on one-way streets, markings may be placed on the curb delineating the ends of the individual stalls.
2. All stall markings are made with 100 mm (4 in) wide white lines. The shape is optional.
3. The parking stall cross line, 2.44 m (8 ft) from the curb, may be continuous longitudinally.

Figure 3B-104. Treatment for Divided Highway Illusion



NOTE:

1. **Use a Double Yellow Line (Two Direction - No Passing) to discourage wrong way movements at critical locations, such as entering roads or approaches to transitions.**

NOT TO SCALE

Where a mandatory movement is required, a Type I, II, III, IV, VII, or VIII arrow shall be placed with its point approximately 6.10 m (20 ft) preceding the limit line, crosswalk or "STOP" pavement legend. Where no mandatory movement is required, a Type V arrow shall be used at this location.

All other additional arrows, when used, shall be a minimum of 7.32 m (24 ft) in length.

All arrows shall be placed in the center of the lane and spaced approximately 30 m (100 ft) to 90 m (300 ft) apart.

Guidance:

The actual position and spacing should be determined in the field to provide the optimum visibility for traffic that may attempt to enter the exit ramp in the wrong direction.

Support:

See Figures 3B-21 (CA) and 3B-23(CA).

Entrance Ramp Arrows:

Standard:

A minimum of one Type I arrow, not less than 5.49 m (18 ft) in length, shall be positioned in the center of each freeway entrance ramp lane so that it is clearly in view of a right-way driver.

Guidance:

The distance between arrows, when more than one per lane is needed, should be 30 m (100 ft) to 90 m (300 ft). The Type V arrow should not be used on entrance ramps.

Support:

See Figures 3B-21 (CA) and 3B-23(CA).

Additional information on signing of ramp terminals is shown in Section 2E.50.

Turn Lane Arrows:

Standard:

One directional arrow, a minimum of 2.44 m (8 ft) in length, shall be placed in the center of each turning lane near the point of entrance.

Option:

High approach speeds may justify the use of a longer arrow. Two or more arrows may be placed in long turning lanes.

Support:

See Figures 3B-7 (CA) and 3B-101.

Support:

Refer to Section 2E.50 for Wrong-Way Traffic Control at Interchange Ramps.

Figure 3B-19. International Symbol of Accessibility Parking Space Marking with Blue Background and White Border Options

Standard:

MUTCD Figure 3B-19 is deleted and replaced with Figure 3B-19 (CA).

Figure 3B-20. Example of Elongated Letters for Word Pavement Markings

Standard:

MUTCD Figure 3B-20 is deleted and replaced with Figure 3B-20 (CA).

Figure 3B-21. Examples of Standard Arrows for Pavement Markings

MUTCD Figure 3B-21 is deleted and replaced with Figure 3B-21 (CA).

Figure 3B-22. Example of Lane Use Control Word and Symbol Markings
Standard:

Lane-use arrow markings shown in this figure as optional, shall not be optional but required. See Section 3B.19.

Limit lines (stop lines) (as shown in this figure) shall not be used in conjunction with marked crosswalks. See Section 3B.16.

Support:

See Figure 3A-112, Detail 40 and 40A for lane line extensions.

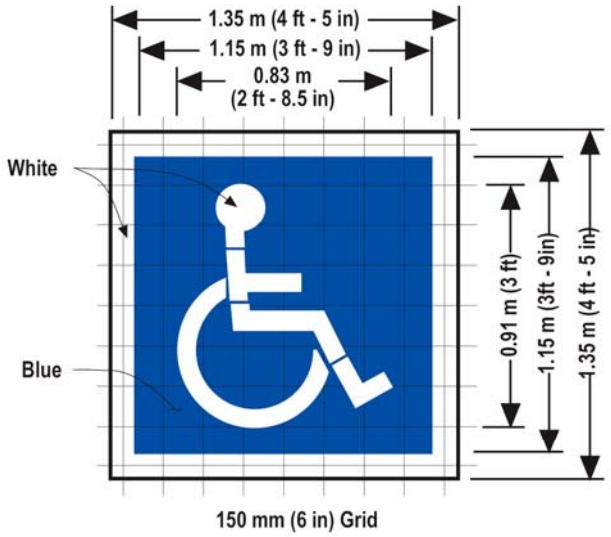
Figure 3B-23. Examples of Arrow Markings at Exit Ramp Terminals
Standard:

The MUTCD Figure 3B-23 is deleted and replaced with Figure 3B-23 (CA).

Figure 3B-24. Examples of Arrow Markings at Entrance Ramp Terminals
Standard:

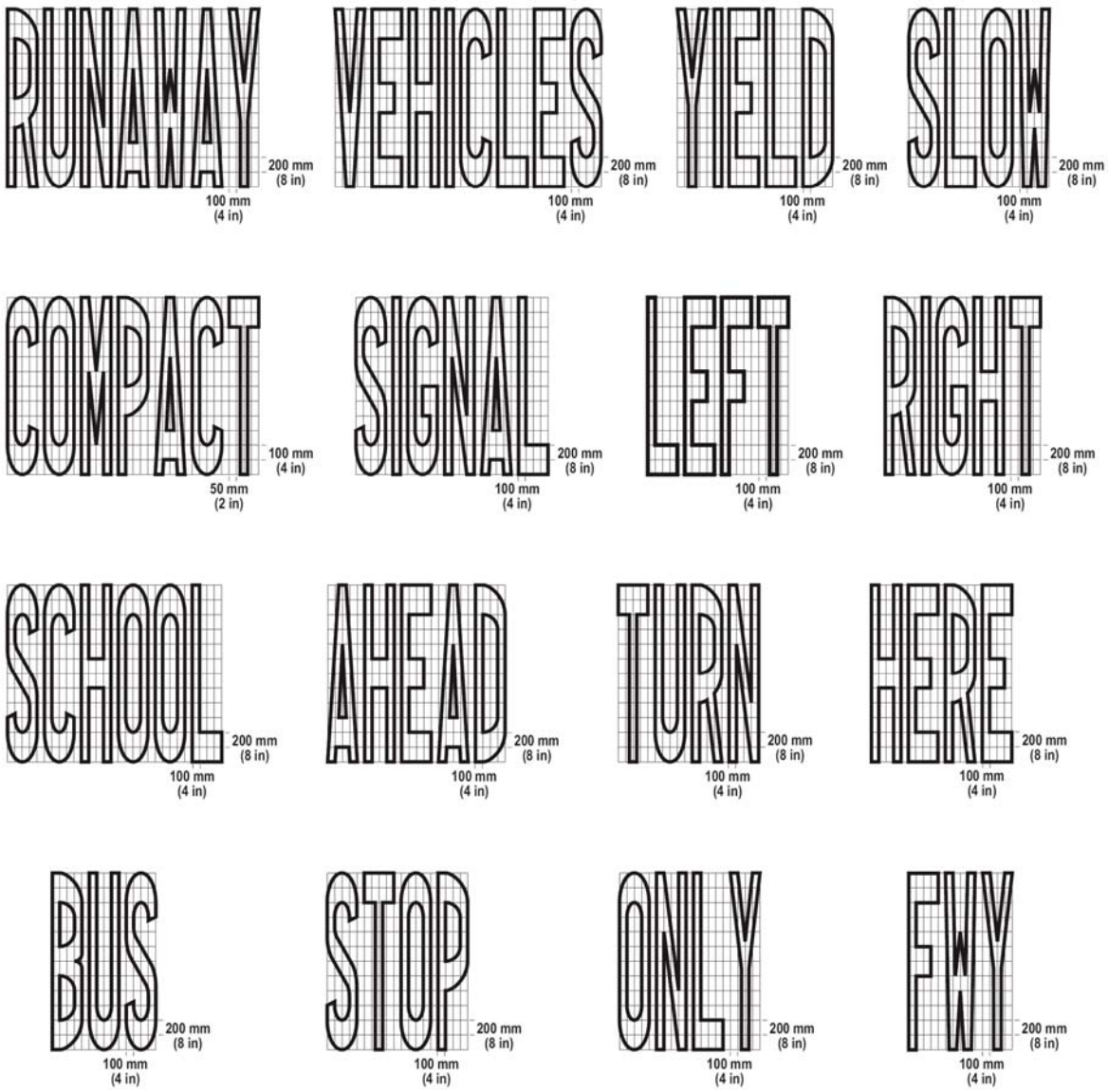
The MUTCD Figure 3B-24 is deleted and replaced with Figure 3B-23 (CA).

Figure 3B-19 (CA). Disabled Persons Parking Symbol



NOTE: The design detail for this symbol is also shown in the Department of Transportation's Standard Plans.

Figure 3B-20 (CA). Examples of Elongated Letters for Word Pavement Markings (Sheet 1 of 2)

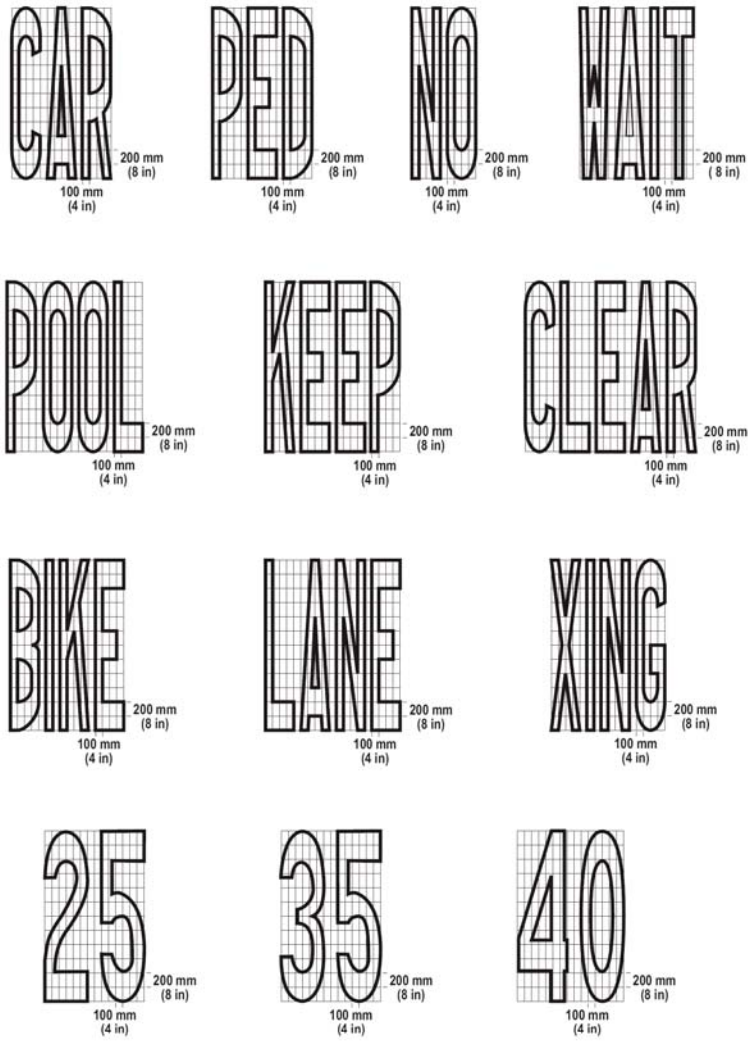


NOTES:

1. **All letters and numerals should be in conformance with the standard alphabets for highway signs and pavement markings approved by Caltrans.**
2. **The design details for various words are also shown in the Standard Plans published by Caltrans.**

NOT TO SCALE

Figure 3B-20 (CA). Examples of Elongated Letters for Word Pavement Markings (Sheet 2 of 2)

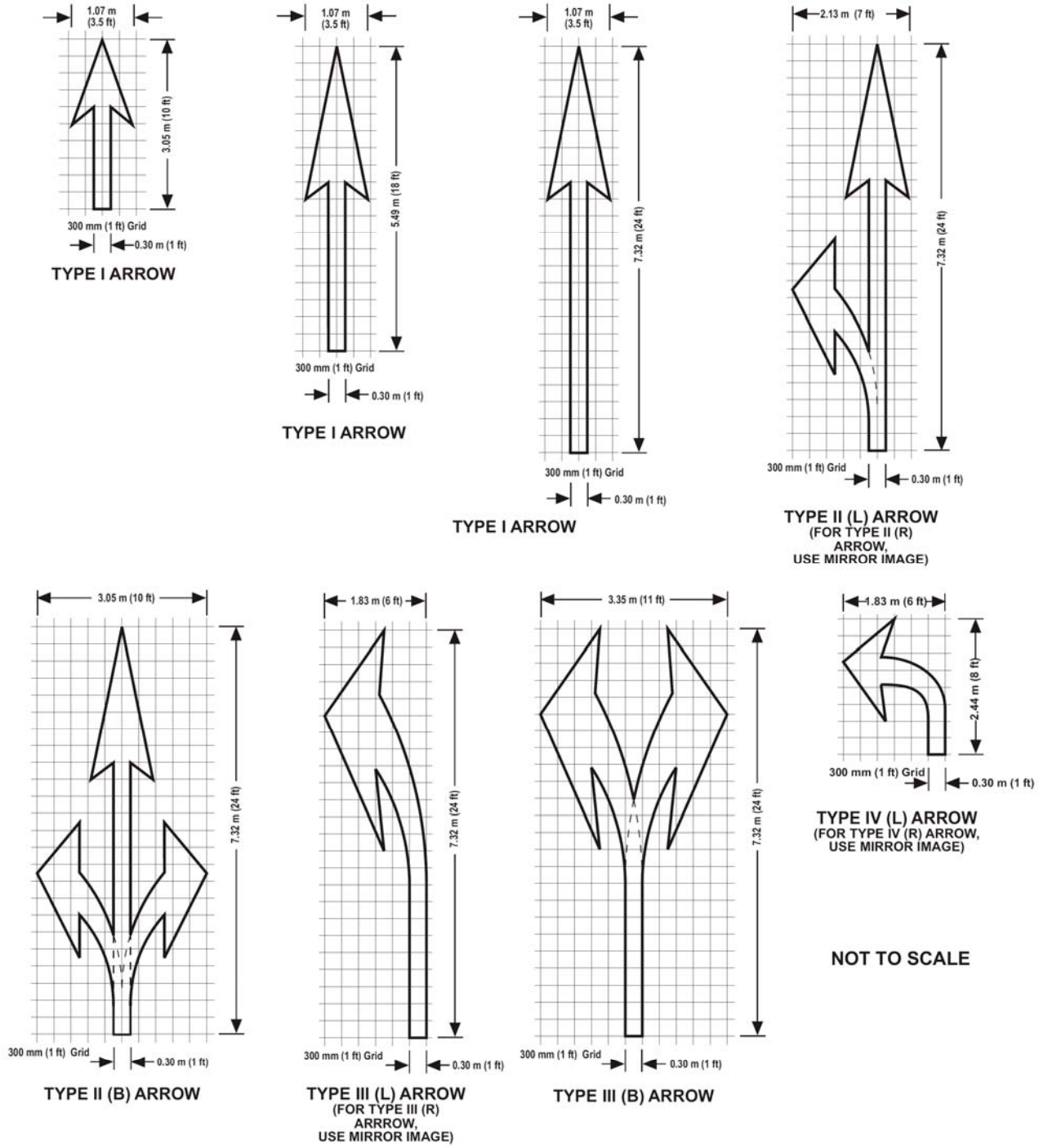


NOTES:

1. **All letters and numerals should be in conformance with the standard alphabets for highway signs and pavement markings approved by Caltrans.**
2. **The design details for various words are also shown in the Standard Plans published by Caltrans.**
3. **Half-size "BIKE LANE" legends are shown on Figure 9C-105 in "Part 9 Traffic Controls for Bicycle Facilities."**

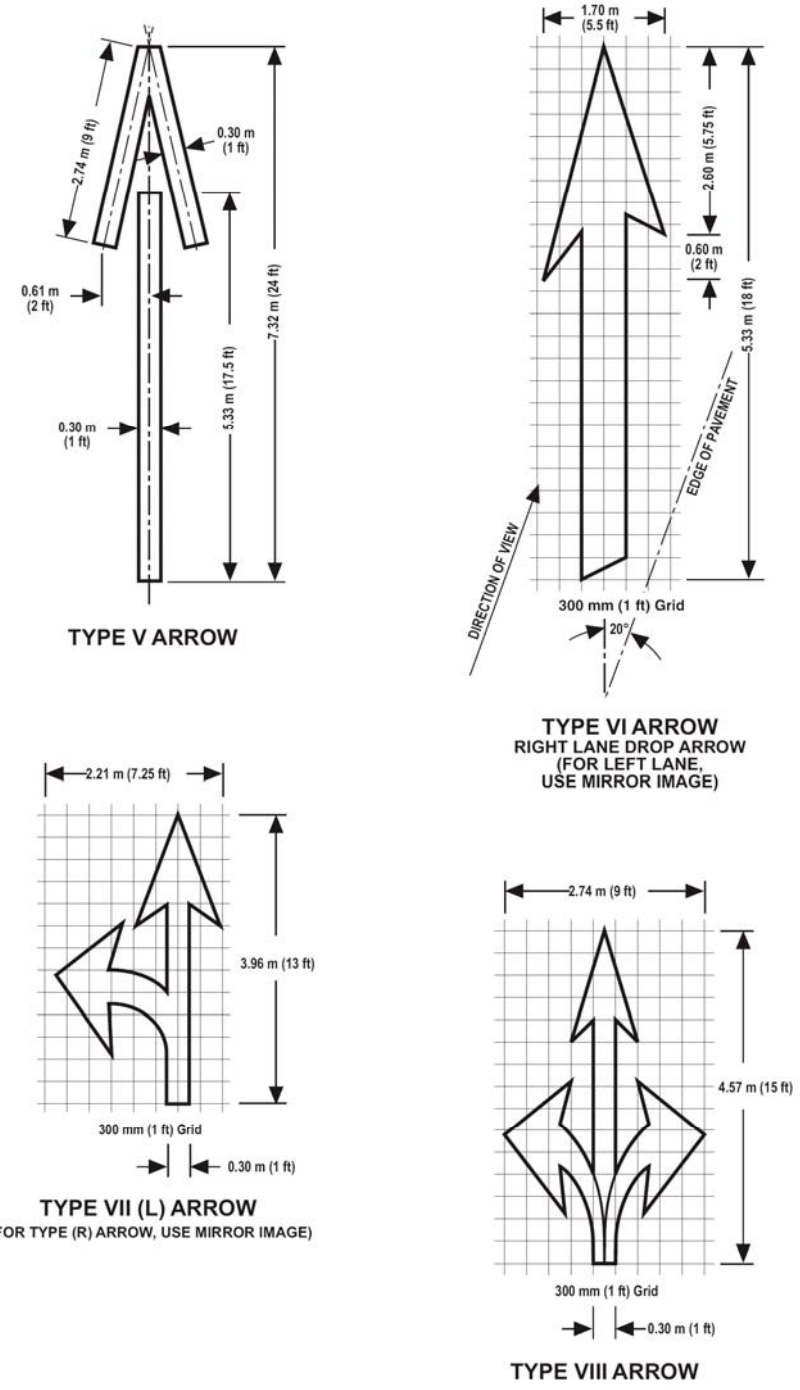
NOT TO SCALE

Figure 3B-21 (CA). Examples of Arrows for Pavement Markings (Sheet 1 of 2)



NOTE: The design details for various arrows are also shown in the Standard Plans published by Caltrans.

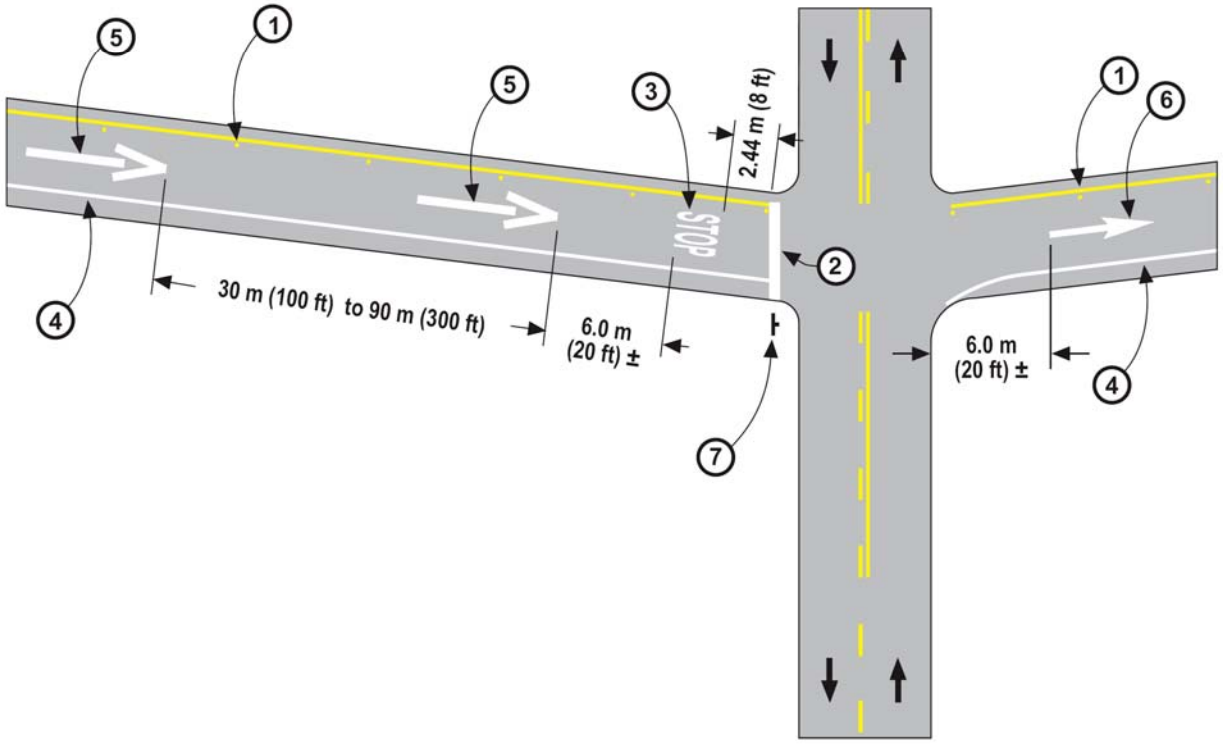
Figure 3B-21 (CA). Examples of Arrows for Pavement Markings (Sheet 2 of 2)



NOT TO SCALE

NOTE: The design details for various arrows are also shown in the Standard Plans published by Caltrans.

Figure 3B-23 (CA). Examples of Entrance/Exit Ramp Terminal Signs and Pavement Markings (Sheet 1 of 6)



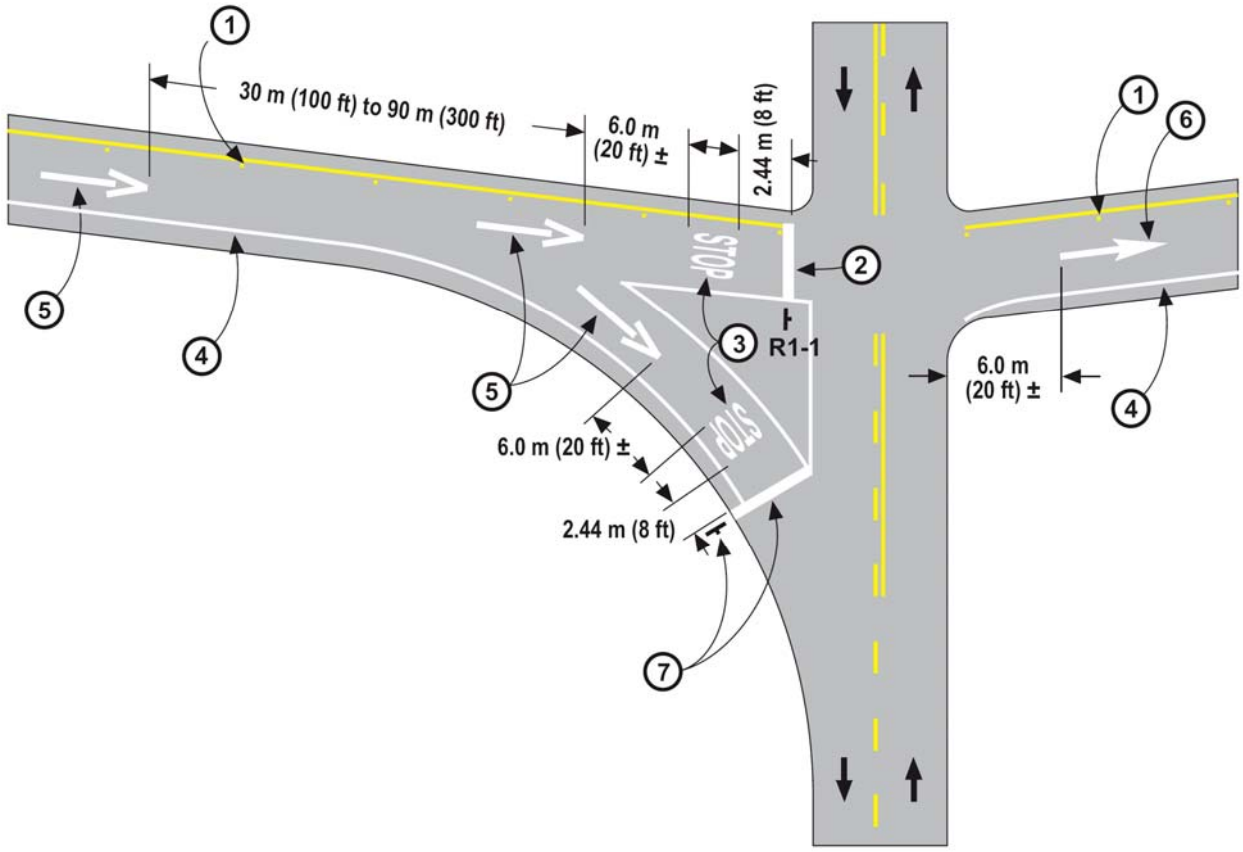
NOTES:

1. Place 100 mm (4 in) Solid Yellow Left Edge Line and One-Way Yellow Retroreflective Pavement Markers on 7.32 m (24 ft) centers as shown. See Edge Line Detail 25A.
2. Place Limit Line as shown. See also Note 7 and Section 3B.16.
3. Place "STOP" legend as shown. See Section 3B.16.
4. Place 100 mm (4 in) Solid White Right Edge Line, flared end optional, as shown. See Edge Line Detail 27B.
5. Place Type V Arrows, in pairs, as shown. See Section 3B.19.
6. Place Type I Arrow as shown. See Section 3B.19.
7. A "YIELD" (R1-2) sign, Yield Line and "YIELD" pavement legend may be used in lieu of the "STOP" (R1-1) sign, Limit Line and "STOP" pavement legend on low volume roads.

LEGEND

→ Direction of Travel NOT TO SCALE

Figure 3B-23 (CA). Examples of Entrance/Exit Ramp Terminal Signs and Pavement Markings (Sheet 2 of 6)



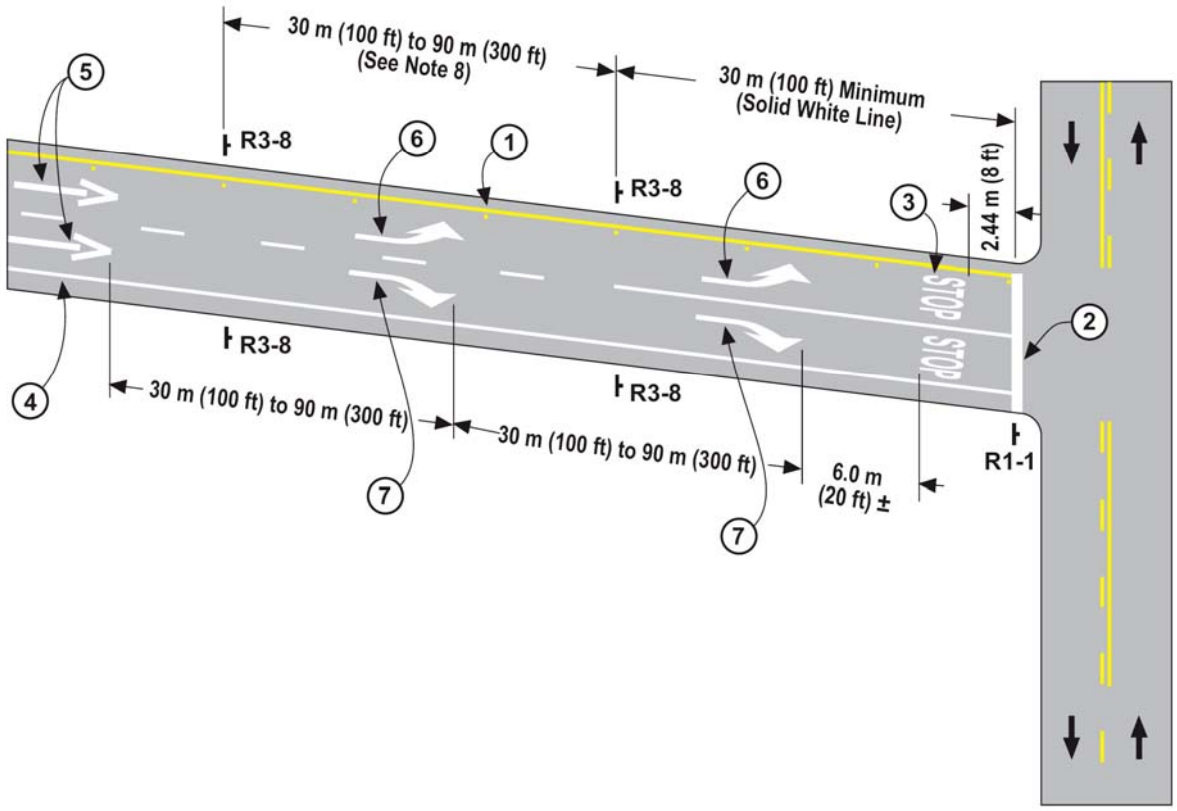
NOTES:

1. Place 100 mm (4 in) Solid Yellow Left Edge Line and One-Way Yellow Retroreflective Pavement Markers on 7.32 m (24 ft) centers as shown. See Edge Line Detail 25A.
2. Place Limit Line as shown. See Section 3B.16.
3. Place "STOP" legend as shown. See Section 3B.16.
4. Place 100 mm (4 in) Solid White Right Edge Line, flared end optional, as shown. See Edge Line Detail 27B.
5. Place Type V Arrows, in pairs, as shown. See Section 3B.19.
6. Place Type I Arrow as shown. See Section 3B.19.
7. A "YIELD" (R1-2) sign, Yield Line and "YIELD" pavement legend may be used in lieu of the "STOP" (R1-1) sign, Limit Line and "STOP" pavement legend on low volume roads.

LEGEND

→ Direction of Travel NOT TO SCALE

Figure 3B-23 (CA). Examples of Entrance/Exit Ramp Terminal Signs and Pavement Markings (Sheet 3 of 6)



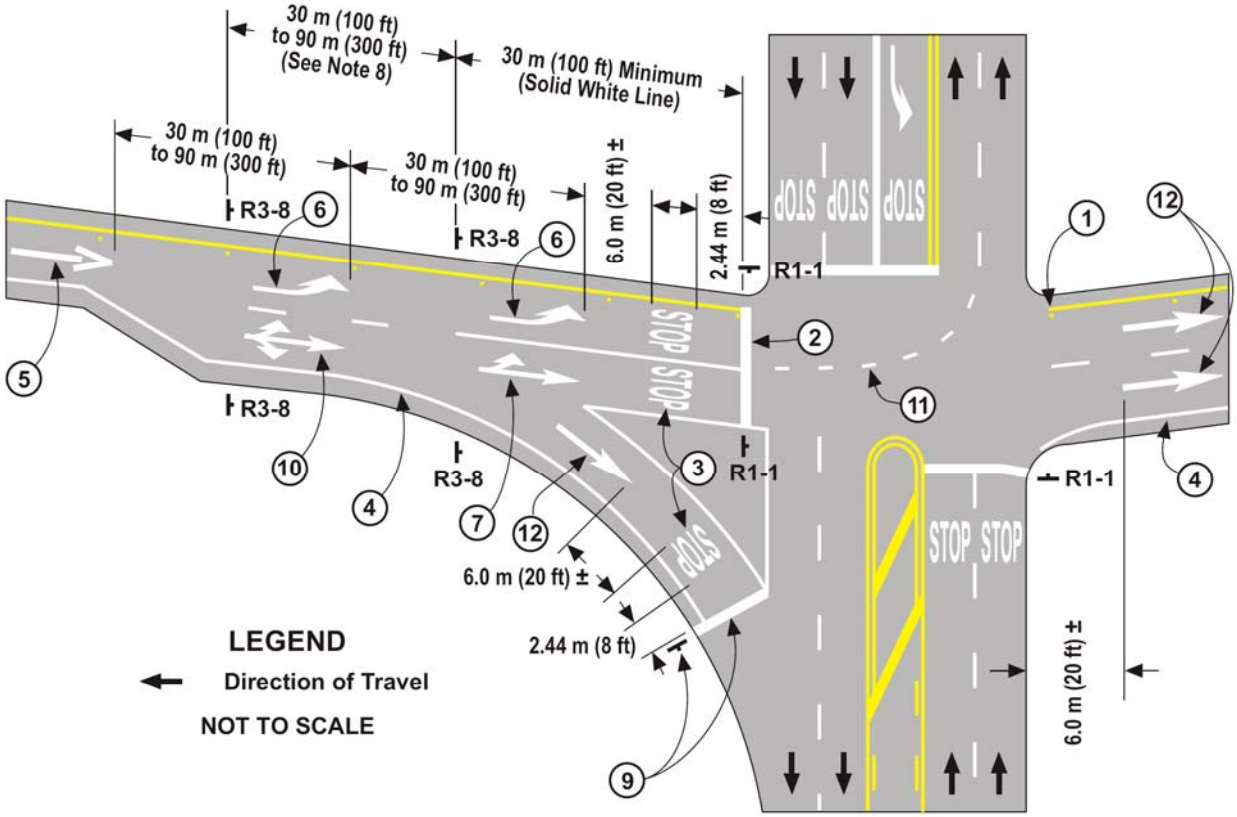
NOTES:

1. Place 100 mm (4 in) Solid Yellow Left Edge Line and One-Way Yellow Retroreflective Pavement Markers on 7.32 m (24 ft) centers as shown. See Edge Line Detail 25A.
2. Place Limit Line as shown. See Section 3B.16.
3. Place "STOP" legend as shown. See Section 3B.16.
4. Place 100 mm (4 in) Solid White Right Edge Line, flared end optional, as shown. See Edge Line Detail 27B.
5. Place Type V Arrows as shown. See Section 3B.19.
6. Place Type III (L) Arrows, in pairs, as shown when distance permits. See Section 3B.19.
7. Place Type III (R) Arrows, in pairs, as shown when distance permits. See Section 3B.19.
8. Lane Use Control (R3-8) signs should be placed on both sides of the exit ramp, at the beginning of the Solid White Line. An additional set should also be placed in advance where distance permits, to alert the motorist of lane use controls ahead.

LEGEND

→ Direction of Travel NOT TO SCALE

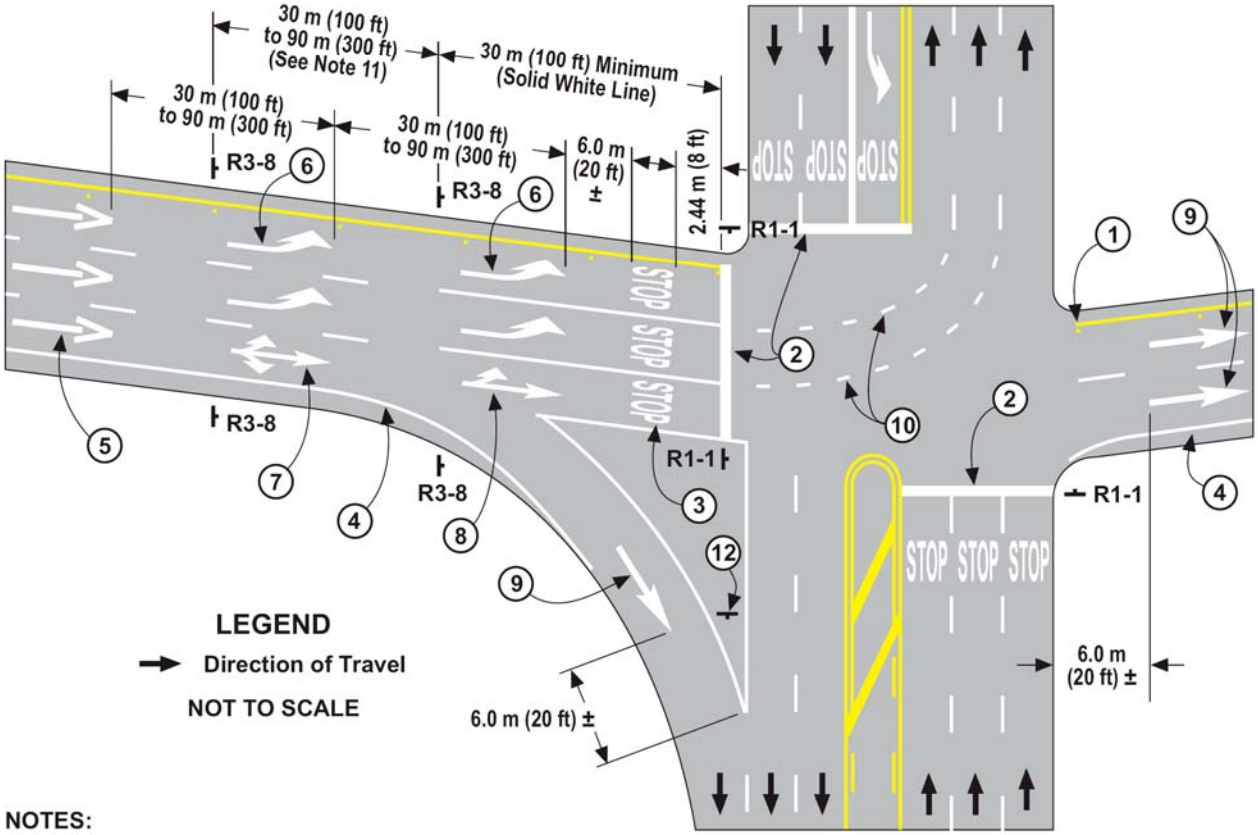
Figure 3B-23 (CA). Examples of Entrance/Exit Ramp Terminal Signs and Pavement Markings (Sheet 4 of 6)



NOTES:

1. Place 100 mm (4 in) Solid Yellow Left Edge Line and One-Way Yellow Retroreflective Pavement Markers on 7.32 m (24 ft) centers as shown. See Edge Line Detail 25A.
2. Place Limit Line as shown. See Section 3B.16.
3. Place "STOP" legend as shown. See Section 3B.16.
4. Place 100 mm (4 in) Solid White Right Edge Line, flared end optional, as shown. See Edge Line Detail 27B.
5. Place Type V Arrow as shown. See Section 3B.19.
6. Place Type III(L) Arrows, in pairs, as shown where distance permits. See Section 3B.19.
7. Place Type II(L) Arrow, as shown where distance permits. See Section 3B.19.
8. Lane-Use Control (R3-8) signs should be place on both sides of the exit ramp, at the beginning of the Solid White Line. An additional set should also be placed in advance where distance permits, to alert the motorist of lane use controls ahead.
9. A "YIELD" (R1-2) sign, Yield Line and "YIELD" pavement legend may be used in lieu of the "STOP" (R1-1) sign, Limit Line and "STOP" pavement legend on low volume roads.
10. Place Type II(B) Arrow, as shown. See Section 3B.19.
11. Lane Line Extensions through the intersection may be used, as shown. See Lane Line Detail 40.
12. Place Type I [7.32 m (24 ft)] Arrows as shown. See Section 3B.19.

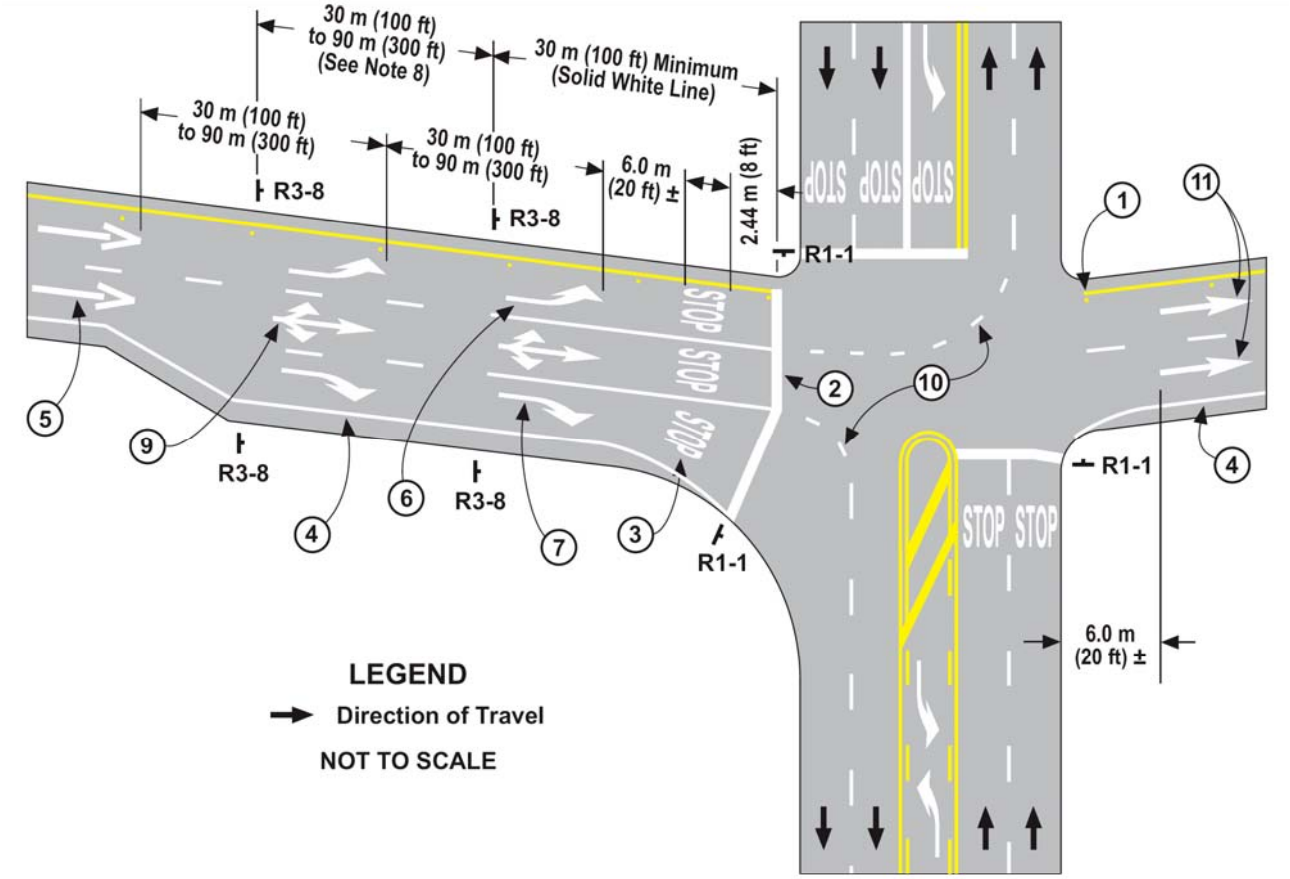
Figure 3B-23 (CA). Examples of Entrance/Exit Ramp Terminal Signs and Pavement Markings (Sheet 5 of 6)



NOTES:

1. Place 100 mm (4 in) Solid Yellow Left Edge Line and One-Way Yellow Retroreflective Pavement Markers on 7.32 m (24 ft) centers as shown. See Edge Line Detail 25A.
2. Place Limit Line as shown. See Section 3B.16.
3. Place "STOP" legend as shown. See Section 3B.16.
4. Place 100 mm (4 in) Solid White Right Edge Line, flared end optional, as shown. See Edge Line Detail 27B.
5. Place Type V Arrows as shown. See Section 3B.19.
6. Place Type III(L) Arrows, in pairs, as shown where distance permits. See Section 3B.19.
7. Place Type II(B) Arrow, as shown where distance permits. See Section 3B.19.
8. Place Type II(L) Arrow, as shown. See Section 3B.19.
9. Place Type I [7.32 m (24 ft)] Arrow as shown. See Section 3B.19.
10. Lane Line Extensions through the intersection may be used, as shown. See Lane Line Detail 40.
11. Lane-Use Control (R3-8) signs should be place on both sides of the exit ramp, at the beginning of the Solid White Line. An additional set should also be placed in advance where distance permits, to alert the motorist of lane use controls ahead.
12. The Added Lane Symbol (W4-3) sign should be used in lieu of the Merge Symbol (W4-1) sign, when an extra lane is provided of more than 0.8 km (1/2 Mile) in length.

Figure 3B-23 (CA). Examples of Entrance/Exit Ramp Terminal Signs and Pavement Markings (Sheet 6 of 6)



NOTES:

1. Place 100 mm (4 in) Solid Yellow Left Edge Line and One-Way Yellow Retroreflective Pavement Markers on 7.32 m (24 ft) centers as shown. See Edge Line Detail 25A.
2. Place Limit Line as shown. See Section 3B.16.
3. Place "STOP" legend as shown. See Section 3B.16.
4. Place 100 mm (4 in) Solid White Right Edge Line, flared end optional, as shown. See Edge Line Detail 27B.
5. Place Type V Arrows as shown. See Section 3B.19.
6. Place Type III(L) Arrows, in pairs, as shown where distance permits. See Section 3B.19.
7. Place Type III(R) Arrows, in pairs, as shown where distance permits. See Section 3B.19.
8. Lane-Use Control (R3-8) signs should be place on both sides of the exit ramp, at the beginning of the Solid White Line. An additional set should also be placed in advance where distance permits, to alert the motorist of lane use controls ahead.
9. Place Type II(B) Arrows, in pairs, as shown where distance permits. See Section 3B.19.
10. Lane Line Extensions through the intersection may be used, as shown. See Lane Line Detail 40.
11. Place Type I [7.32 m (24 ft)] Arrows as shown. See Section 3B.19.

Section 3B.20 Speed Measurement Markings

The following is added to this section:

Support:

The California Highway Patrol patrols certain highways with both helicopters and fixed-wing aircraft. The purpose of the patrol is to monitor traffic, provide motorist assistance and initiate appropriate enforcement action.

In order to make the air patrol effective, the California Highway Patrol and Caltrans have agreed upon markings and signs as shown in Figure 3B-105.

Option:

Speed measurement markings may be placed on the right shoulder in areas patrolled by aircraft as requested by the California Highway Patrol.

Standard:

Where there is an equation of more than 30 m (100 ft) in a 1.6 km (1 mi) posting, a white 'X' pavement marking shall be placed at each end of the section to indicate the markings are less than 1.6 km (1 mi) apart.

Guidance:

The SPEED ENFORCED BY AIRCRAFT (CA Code R48-2) sign should be used for both directions of travel and should be spaced at 40 km (25 mi) intervals.

Pavement marking should be placed on the shoulder in one direction only, except where the opposing roadway is widely separated.

Option:

In areas where identifying features are widely separated, white 0.91 m (3 ft) high post kilometer (mile) numbers may be placed at 8 km (5 mi) points where needed for aircraft reference.

Standard:

Markings shall not be on the traveled way.

Option:

If routes with narrow shoulders are requested for marking, the standard marking shape may be modified to provide an equivalent area without encroaching on the traveled way or the Alternate Marking System described.

Support:

The Alternate Marking System is a 200 mm (8 in) wide solid white longitudinal line, 6.1 m (20 ft) in length and in line with the right edge line. It is preceded and followed by a 6.1 m (20 ft) gap in the right edge line.

Section 3B.21 Curb Markings

Standard:

Paragraphs 6 ("Retroreflective solid yellow…") and 7 ("Retroreflective solid white…") are deleted. In California, object markers are used for this purpose. See Chapter 3C.

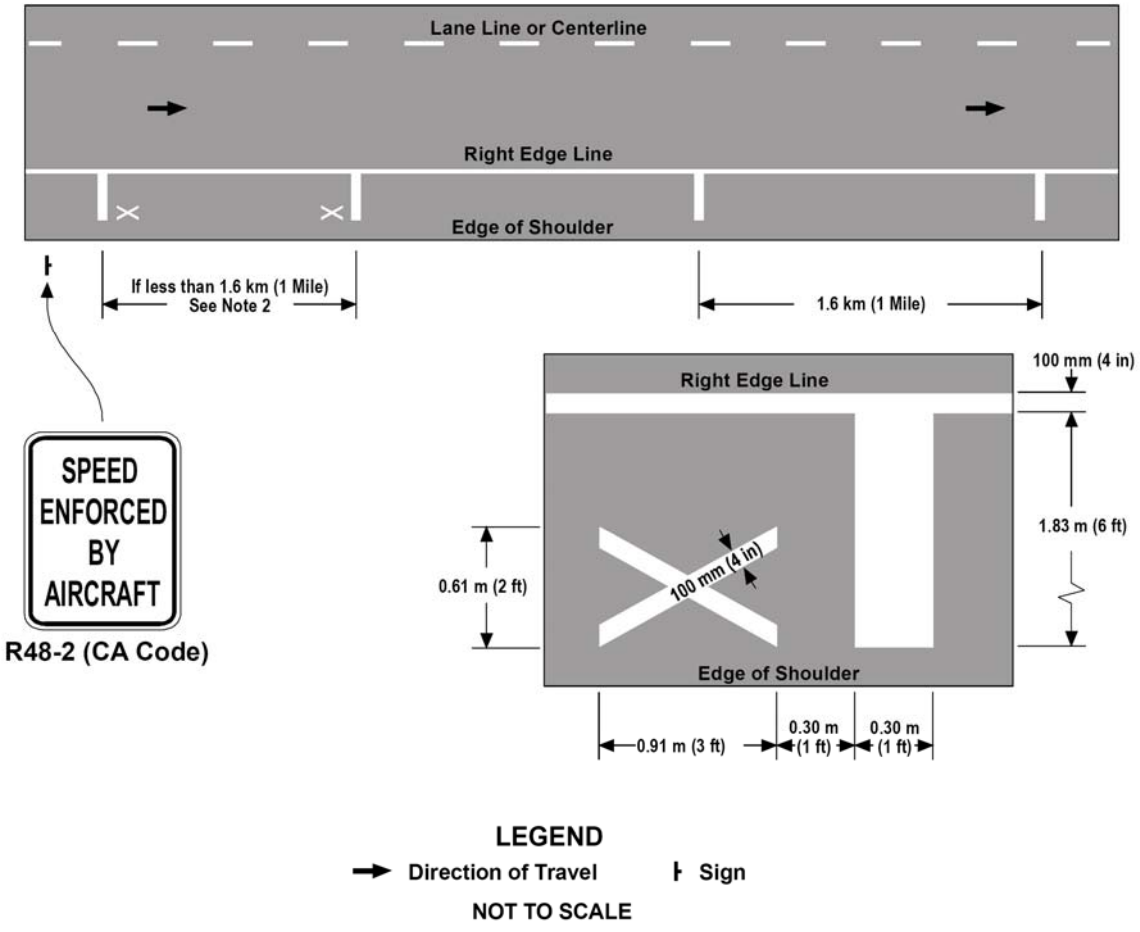
The following is added to this section:

Support:

Refer to Section 2B.39 for Parking Regulations.

In California, curb markings are not used for delineating traffic. They are mainly used for parking regulations.

Figure 3B-105. Examples of Signs and Markings for Highways Where Speed is Enforced by Aircraft



Standard:

The color of curb markings shall conform to CVC 21458 quoted below:

(a) Whenever local authorities enact local parking regulations and indicate them by the use of paint upon curbs, the following colors only shall be used, and the colors indicate as follows:

(1) Red indicates no stopping, standing, or parking, whether the vehicle is attended or unattended, except that a bus may stop in a red zone marked or sign posted as a bus loading zone.

(2) Yellow indicates stopping only for the purpose of loading or unloading passengers or freight for the time as may be specified by local ordinance.

(3) White indicates stopping for either of the following purposes:

(A) Loading or unloading of passengers for the time as may be specified by local ordinance.

(B) Depositing mail in an adjacent mailbox.

(4) Green indicates time limit parking specified by local ordinance.

(5) Blue indicates parking limited exclusively to the vehicles of disabled persons and disabled veterans.

(b) Regulations adopted pursuant to subdivision (a) shall be effective on days and during hours or times as prescribed by local ordinances.

Parking regulations shall be covered by ordinance or order of the authority having jurisdiction over the street or highway.

Option:

Curb markings may supplement standard signs.

Prohibitions or restrictions enacted by local authorities under Sections 22506 or 22507 may be indicated by marking curbs as prescribed by CVC Section 21458.

Policy on Parking Restrictions

Support:

Loading Zones - Local authorities are authorized by Section 21112 of the CVC to license and regulate the location of stands on streets and highways for use of taxicabs and other public carriers for hire. Where such stands are located on State highways, and highway maintenance is not delegated to the local authority, the approval of the Department is required. The District Directors have been delegated authority to approve local ordinances establishing such stands.

Loading zone ordinances restricted for certain segments of traffic such as "hotel patrons only" will not be approved. Bus stand ordinances are generally approved.

Standard:

Whenever practicable, bus stands shall be located on the far side of the intersection.

Section 3B.22 Preferential Lane Word and Symbol Markings

Support:

In Paragraph 9 (“The spacing of…”) the second sentence (“Markings spaced as…”) is deleted and replaced with the following:

Markings spaced as close as 24 m (80 ft) apart might be appropriate on city streets, while markings spaced 150 m (500 ft) might be appropriate for freeways (Refer to HOV Guidelines) and 56 m (180 ft) for onramps (Refer to Ramp Meter Design Manual). See Section 1A.11 for information regarding these publications.

Standard:

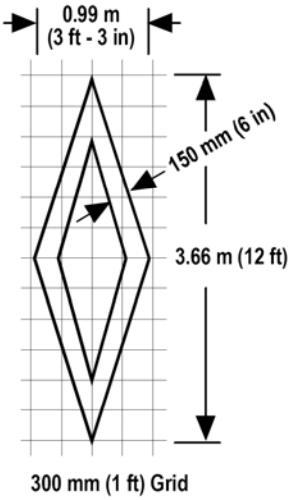
Paragraph 10 (“The vehicle occupancy…”) is deleted and shall not be applicable in California.

The following is added to this section:

Support:

For State highways, see Department of Transportation’s High Occupancy Vehicle (HOV) Guidelines and Ramp Meter Design Manual. See Section 1A.11 for information regarding these publications.

Figure 3B-106. Diamond Symbol (HOV Lane)



NOTE: The design detail for this symbol is also shown in the Department of Transportation's Standard Plans.

High Occupancy Vehicle (HOV) lanes are lanes where usage is restricted to a class of vehicle occupancy. HOV lane assignments could be made on a full-time or part time basis. Freeway mainline HOV lanes can be operated as physically separated, buffer separated, reversible, contiguous, or as contra-flow facilities. HOV lanes can also be operated on county roads or city streets.

The HOV lane symbol (diamond shape) is shown in Figure 3B-106.

Section 3B.23 <u>Preferential Lane Longitudinal Markings for Motor Vehicles</u>
Standard:

In Paragraph 4 ("The following four…"), sub-heading C, notes 1, 2 and 3 are deleted and replaced with the following:

1. **A single solid wide white line where crossing is discouraged (see Figure 3B-26c).**
2. **A single broken wide white line where crossing is permitted (see Figure 3B-26d) at ingress/egress segments for physically separated full-time preferential lanes.**
3. **A single broken 100 mm (4 in) white line where crossing is permitted on preferential lanes that operate for only certain periods of the day. In these cases, markings shall conform to the purpose the lane serves a majority of the time.**

In Paragraph 4 ("The following four…"), sub-heading D, notes 1, 2 and 3 are deleted and replaced with the following:

1. **A single solid wide white line where crossing is discouraged (see Figure 3B-25c).**
2. **A single broken 100 mm (4 in) white line where crossing is permitted on preferential lanes that operate for only certain periods of the day. In these cases, markings shall conform to the purpose the lane serves a majority of the time.**
3. **A single dotted normal white line where crossing is permitted for any vehicle to perform a right turn maneuver (see Figure 3B-25e).**

Option:

Paragraph 6 ("When concurrent flow…") is deleted and replaced with the following:

When concurrent flow preferential lanes and other travel lanes are separated by 3.6 m (12 ft) or more, chevron markings may be placed in the neutral area.

Guidance:

If used, the chevron spacing should be 60 m (200 ft) or greater.

Standard:

Paragraph 7 ("For full-time…") is deleted and shall not be applicable in California.

The following is added to this section:

Support:

The striping pattern for the lane lines between the HOV lane and the adjacent normal flow lanes will vary depending on the condition. See Department of Transportation's High Occupancy Vehicle (HOV) Guidelines and Ramp Meter Design Manual for the appropriate HOV lane line striping patterns and markings. See Section 1A.11 for information regarding these publications.

Table 3B-2. Standard Edge Line Lane Markings for Preferential Lanes

Standard:

MUTCD Table 3B-2 is deleted and replaced with Table 3B-2 (CA).

Section 3B.26 Speed Hump Markings

The following is added to this section:

Support:

Per CVC 440, speed humps or bumps are not official traffic control devices.

Section 3B.101 Diagonal and Chevron Markings

Guidance:

Diagonal and chevron markings should be used, when in the opinion of an engineer, it is necessary to add emphasis or to discourage vehicular travel upon a paint formed roadway feature such as an unusually wide shoulder area, a pedestrian refuge island, or a traffic divisional or channelization island.

Diagonal lines, when used, should be installed between an edge line and traffic island, or between pairs of double yellow lines.

Chevron markings, when used, should be installed between channelizing lines for traffic flows in the same direction.

Support:

The applicable channelizing lines for chevron markings are shown in Figure 3A-110, Details 36, 36A and 36B and pairs of lines shown in Figure 3A-112, Details 38 and 38A.

The diagonal lines or chevron markings are normally 300 mm (12 in) wide.

Standard:

Diagonal lines and chevrons shall be the same color as the line or lines to which they connect and shall point at a 45-degree forward angle.

Diagonal lines or chevrons, if used, shall be the same color as the edge line.

Option:

The spacing between these lines may vary from 0.3 m (1 ft) in a pedestrian crosswalk to 60 m (200 ft) for vehicular traffic.

Table 3B-2(CA). Standard Edge Line Lane Markings for Preferential Lanes

Type of Preferential Lane	Left Edge Line	Right Edge Line
Physically-Separated, Non-Reversible	A Single normal solid yellow line	A Single normal solid white line
Physically-Separated, Reversible	A Single normal solid white line	A Single normal solid white line
Concurrent Flow-Left Side	A Single normal solid yellow line	A single solid wide white line where crossing is discouraged (see Figure 3B-25c) A single broken wide white line where crossing is permitted (see Figure 3B-25d) for full-time preferential lane ingress/egress segments A single broken 100 mm (4 in) white line for part-time preferential lanes
Concurrent Flow-Right Side	A single solid wide white line where crossing is discouraged (see Figure 3B-25c) A single broken 100 mm (4 in) white line for part-time preferential lanes A single dotted normal white line where crossing is permitted for any vehicle to perform a right-turn maneuver (see Figure 3B-25e)	A Single normal solid white line

Notes: If there are two or more preferential lanes, they shall be separated with a normal broken white line.
The standard lane markings listed in this table are provided in a tabular format for reference.
This information is also described in the second Standard in Section 3B.23.

Section 3B.102 Passing Lanes

Standard:

When a passing lane is provided, a two-direction no passing marking (see Figure 3A-104) shall be used when the Average Daily Traffic (ADT) exceeds 3,000. See Figure 3B-107.

Option:

Passing in both directions may be provided by alternating the direction of the middle lane at about 1.6 km (1 mi) intervals.

A one-direction no passing marking (see Figure 3A-103) with one or more YIELD TO UPHILL TRAFFIC (CA Code R55) signs may be used when the ADT is 3,000 or less.

Section 3B.103 Truck Lanes

Standard:

When a climbing lane is provided on an upgrade and it is necessary to prohibit trucks from passing slower moving vehicles, a 200 mm (8 in) solid white line shall be used in place of the standard lane line stripe.

The TRUCKS RIGHT LANE ONLY (CA Code R53B) sign shall be placed at the beginning of the restriction and at approximately 0.4 km (1/4 mi) intervals. When the restriction is necessary only during certain hours, the Specific Hours/Days Plaque (CA Code R82A) shall be placed below the R53B (CA Code) sign.

A TRUCK LANE (R4-6) sign shall be placed in advance of the truck lane. An END TRUCK LANE (CA Code R53A) sign shall be placed at the end of the restriction. See Figure 3B-12 (CA) for signing and marking the end of an extra lane.

Section 3B.104 Turn Lanes

Support:

Refer to CVC 21460.5 for Two-Way Left-Turn Lanes.

For details of two-way left-turn lanes, see Figure 3B-7 (CA). For left turn channelization, see Figure 3B-101 and Department of Transportation's Highway Design Manual, Section 405.2. See Section 1A.11 for information regarding this publication.

Standard:

Left-turn or right-turn lanes shall be separated from the through lanes by a single solid 200 mm (8 in) wide white line as shown in Figure 3A-112.

Section 3B.105 Turnouts

Guidance:

Paved turnouts should be marked with a 200 mm (8 in) wide single solid white line between the through lane and the turnout. The line should not extend through the entry and exit areas. See Figure 3B-108 and Department of Transportation's Highway Design Manual, Section 204.5 (4). See Section 1A.11 for information regarding this publication.

Turnouts should be 60 m (200 ft) to 150 m (500 ft) in length including a short taper of 15 m (50 ft) at each end. Turnouts should not be longer than 150 m (500 ft).

The right edge line should be dropped throughout the length of the turnout.

Option:

Turnout length may be increased 30 m (100 ft) on down grades over 3%.

Section 3B.106 Rumble Strips

Support:

Rumble strips are bands of raised material or indentations formed or ground into the traveled way, on the centerline or shoulders. Rumble strips call the motorist's attention to standard warning or regulatory devices or otherwise alert drivers by transmitting sound and/or vibration through the vehicle.

Option:

Rumble strips may be used in the traveled way on California's streets and highways if the traffic engineer considers their use as the optimal solution to the identified problem.

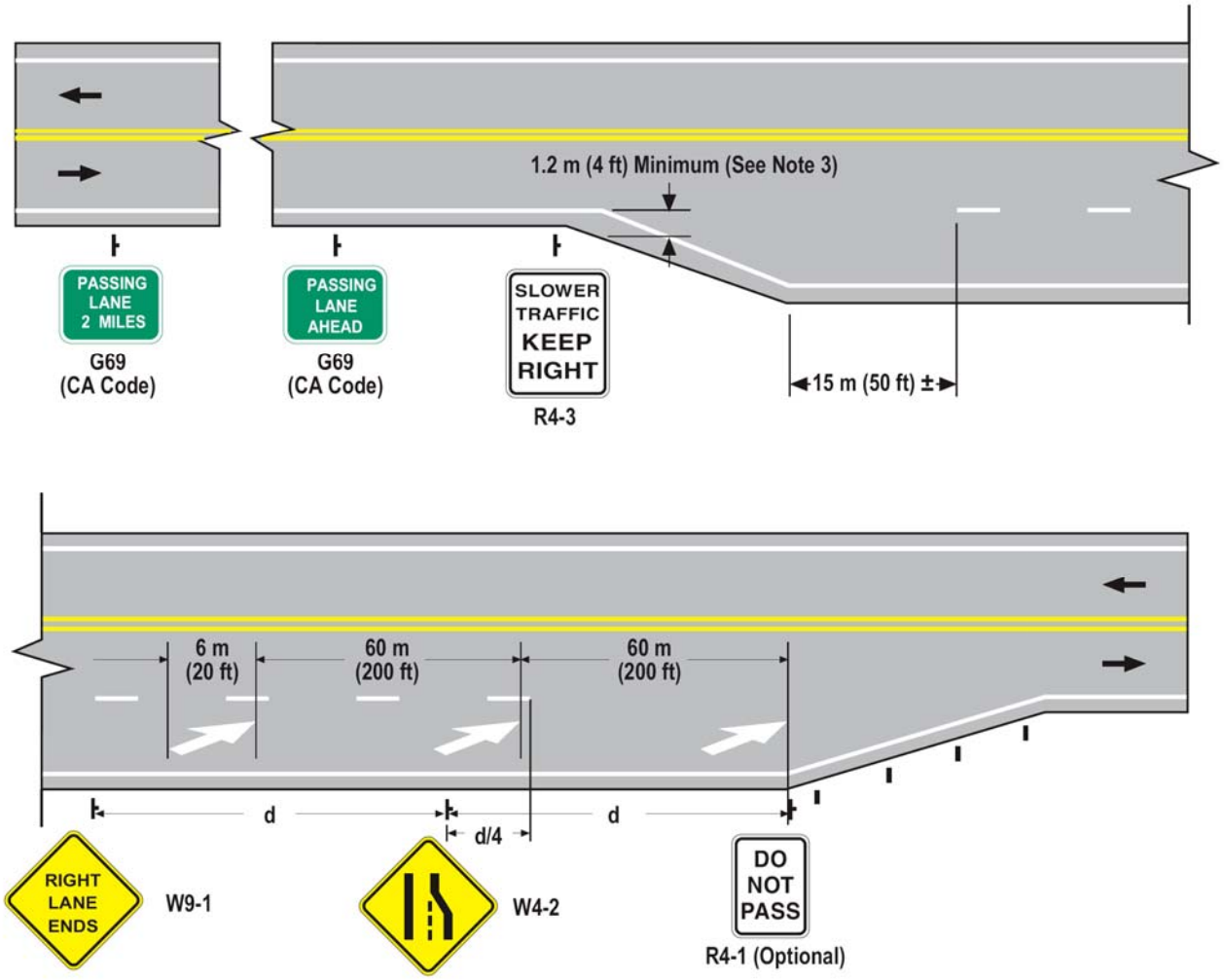
Guidance:

The use of rumble strips on State highways should be reviewed by the Department of Transportation's District Traffic Engineer or their representative.

Option:

Rumble strips may be incorporated into rehabilitation projects to replace existing rumble strips without an extensive review.

Figure 3B-107. Passing Lanes



NOTES:

1. For sign and delineator placement, see Figure 3B-12 (CA) (Sheet 1 of 3).
2. Lane Reduction Arrows may be placed when a passing lane is 1.6 km (1 Mile) or more in length.
3. To discourage vehicular travel off the traveled way, the Right Edge Line should be continued until there is at least 1.2 m (4 ft) between the beginning of the edge line taper and the edge of the traveled way.

LEGEND

d = Advance Placement Distance (see Section 2C.05)

Sign Location

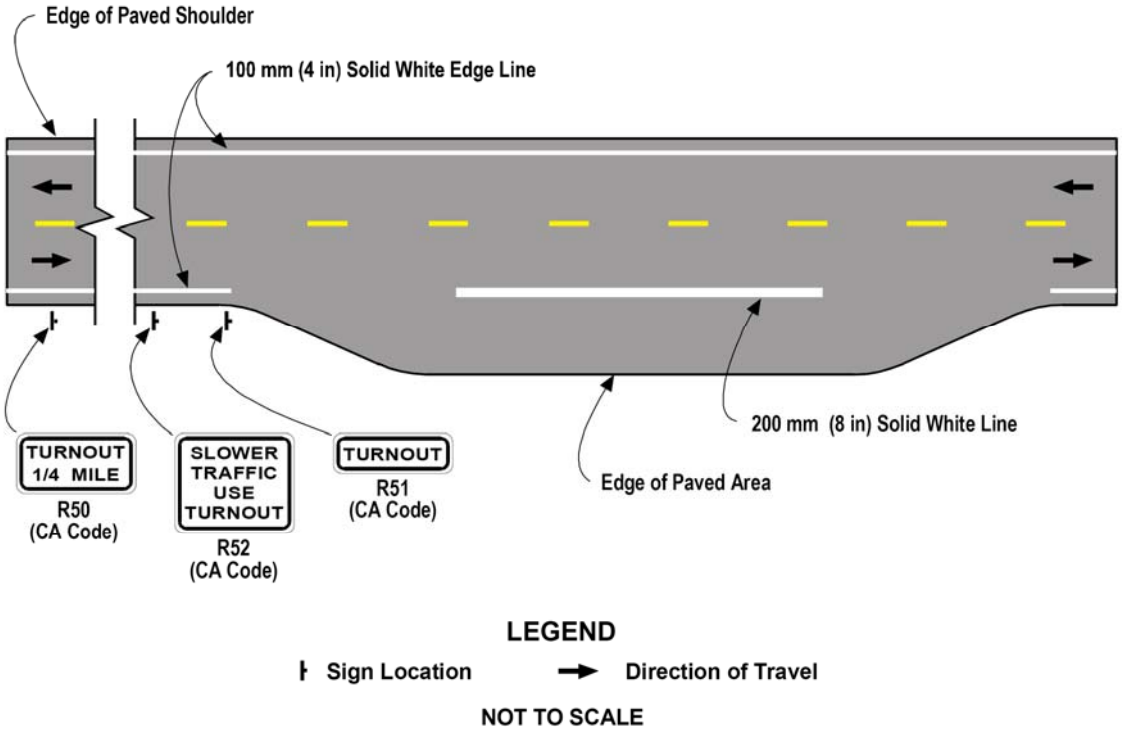
Delineator

Direction of Travel

Lane Reduction Arrow

NOT TO SCALE

Figure 3B-108. Examples of Signing and Marking Turnouts



Guidance:

Requests should include a description of location, reasons for use, the alternatives which were considered, collision history and a discussion of standard traffic control devices which have been or are in place.

Traveled Way Rumble Strips:

Support:

Rumble strips on the traveled way are 19 mm (0.75 in) or less in height if raised or 25 mm (1 in) or less in depth if rolled-in indentations, 8.5 mm (0.33 in) +/- 1.5 mm (0.06 in) if ground-in indentations and generally extend across the travel lanes.

A ground in rumble strip with the dimensions shown above has been field reviewed to confirm rideability for bicyclists & motorcyclists.

There are several significant disadvantages to the use of rumble strips across the travel lanes. These include:

- An abrupt rise in the roadway can present problems to bicyclists and motorcyclists. For this reason, there should be provisions made for cyclists to safely traverse through or around raised rumble strips.
- Nearby residents may be subjected to noise.

Typical locations where rumble strips on the traveled way have been used include:

- End of a freeway.
- In advance of toll booths.
- Within a construction zone in advance of the workers.
- In advance of a "T" Intersection where the motorist is not expecting to stop.

Shoulder Rumble Strips:

Support:

Shoulder rumble strips are 19 mm (0.75 in) or less in height if raised 25 mm (1 in) in depth for rolled-in indentations and 8.5 mm (0.33 in) +/- 1.5 mm (0.06 in) for ground-in indentations that extend along the highway shoulder. The maximum width of shoulder rumble strips is 300 mm (12 in) for both rolled-in and ground-in indentations.

Guidance:

Where bicycles are permitted, shoulder rumble strips should not be used unless approximately 1.5 m (5 ft) of clear shoulder width for bicycle use is available between the rumble strips and the outer edge of the shoulder.

Standard:

If shoulder width is less than 1.5 m (5 ft) and rumble strips are required, then only raised and inverted profile thermoplastic stripe shall be used. Ground-in rumble strip treatments that are greater than 8.5 mm (0.33 in) +/- 1.5 mm (0.06 in) depth shall not be installed on shoulders where bicyclists are allowed.

Option:

Research findings indicate that the use of rumble strips on shoulders of freeways in remote areas may reduce drift-off-road accidents. Drifting off the road is most likely to be a problem on freeways with few interchanges and long tangents. Rumble strips may be used on other roadway types as well to address drift off roadway collisions at locations where they are a concern. The rumble strips may consist of grooves rolled into the hot mix as part of a resurfacing project, ground-in indentation in Portland Concrete Cement or Asphalt Concrete in existing roadway shoulders, or the application of a raised and inverted profile thermoplastic.

Guidance:

When roadways in remote areas are to be resurfaced, consideration should be given to the drift-off-road problem and the use of rumble strips considered.

Option:

Table 3B-101 may be used by the District Traffic Engineer as a guide to determine the appropriate rumble strip treatment for various shoulder types.

Centerline Rumble Strips:

Support:

Centerline rumble strips are currently being used experimentally at 2 and 3 lane locations in California and across the nation as a tool to address drift across the centerline collisions.

Option:

The District Traffic Engineer may consider the use of centerline rumble strips with other considerations as a means of addressing drift across the centerline collisions.

Table 3B-101. Rumble Strip Installation Guide

Rumble Strip Treatment	Rumble Strip Depth	Shoulder Type	Bicycles Permitted	Minimum Shoulder Width
Rolled-In Rumble Strip Treatment Standard Plan A40	25 mm (1 in)	ACC Only	YES	1.5 m (5 ft)
			NO	1.2 m (4 ft)
Ground-In Rumble Strip Treatment Standard Plan A40	8 (+/- 1.5) mm (0.33 in (+/- 0.06 in))	ACC and PCC	YES	1.5 m (5 ft)
			NO	1.2 m (4 ft)
Raised and Inverted Profile Thermoplastic	N/A	ACC and PCC	YES	No Minimum
			NO	No Minimum
Centerline Ground-In Rumble StripTreatment Experimental	8 (+/- 1.5) mm (0.33 in (+/- 0.06 in))	ACC and PCC	N/A	N/A

Note: Ground-In Rumble Strip Treatments that are greater than 8.5 (+/-1.5) mm (0.33 in (+/-0.06 in)) in depth shall not be installed on shoulders where bicyclists are allowed.